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**THE ROLE OF BUSINESS INTELLIGENCE IN
SUPPORTING MARKET SELECTION DECISION IN
THE POWER GENERATION INDUSTRY - CASE: IVO
POWER GENERATION**

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ABSTRACT

The role of information and business intelligence has become ever more important in the decision making of modern business organisations. This is due to the exponential growth in the amount of information, the increasing pace of changes and major structural changes in the business environment. An important area of decision making where effective business intelligence is needed is the international market selection in which all the internationalising companies occasionally need to get engaged.

Market selection is an iterating process consisting of the decision making process and the business intelligence process which both include several sequential phases. The role of business intelligence is to provide the information for the basis of the decisions which aim to find the most suitable market for the company to enter. In market selection the various phases of business intelligence process include preliminary screening, country study, more specific case studies, project development and continuous evaluation of market attractiveness.

Organising the business intelligence system needs to be developed a formalised and co-ordinated approach. What is required is a logical procedure beginning by identifying the intelligence needs, managing the process comprehensively and collecting, analysing and disseminating the intelligence systematically. Through a systematic approach a company is able to provide the intelligence users with timely, reliable and actionable information through which a competitive edge vis-à-vis to competitors can be created.

Key Words:

Business intelligence

Market selection

Decision making process

Information

TIIVISTELMÄ

Informaation ja business intelligencen rooli on tullut yhä tärkeämmäksi nykypäivän yrityksen päätöksenteossa. Syynä tähän ovat informaation määrän exponentiaalinen kasvu, muutosvauhdin nopeutuminen sekä useiden teollisuuden alojen rakenteiden muuttuminen. Yksi tärkeä päätöksenteon osa-alue, missä tehokasta business intelligenceä tarvitaan on kansainvälinen markkinavalinta, joka on osa jokaisen kansainvälisen yrityksen tärkeimpiä päätöksiä.

Markkinavalinta on iteroiva prosessi joka koostuu sekä päätöksentekoprosessista, että business intelligence prosessista. Molemmat sisältävät useampia peräkkäisiä, toisiinsa liittyviä vaiheita. Business intelligencen rooli on luoda eri päätöksentekovaiheissa tarvittavaa tietoa, jonka avulla yritykselle suotuisin markkina-alue pystytään valitsemaan. Markkinavalinnassa business intelligence -prosessin eri vaiheet ovat yleinen seuranta, markkinatutkimus, spesifimpien tutkimusten tekeminen, projektin kehittäminen sekä jatkuva markkinan seuranta.

Business intelligence -järjestelmän organisointi vaatii järjestelmällisen ja koordinoitun lähestymistavan. Tarvitaan looginen prosessi, joka sisältää tiedon käyttäjien tarpeiden identifioimisen, koko prosessin keskitetyn johtamisen, sekä tehokkaan tiedon keräämisen analysoinnin ja jakamisen. Systemaattisen ja loogisen lähestymistavan avulla yritys kykenee business intelligencen avulla luomaan oikea-aikaista, luotettavaa ja tarpeellista informaatiota. Tätä kautta yritys pystyy luomaan ja kehittämään kilpailukykyään omiin kilpailijoihinsa nähden.

Avainsanat:

Business intelligence

Markkinavalinta

Päätöksentekoprosessi

Informaatio

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1 INTRODUCTION

1.1 Why this study

An essential factor for decision making in today's turbulent and constantly changing environment is the information the decisions are based on (Fakta 1997 / 11: 71). The decisions managers can make are no better than the information from which they are derived and the effectiveness of strategies is directly related to the comprehensiveness and timeliness of the information possessed by the organisation (Herring 1992a: 54).

One of the reasons for the growing importance of information is no doubt the internationalisation of competition and the business environment. The sources for threats and opportunities are more varied and numerous which requires more information to be processed. Secondly, the pace of change is continuously increasing: product life-cycles are shorter, information moves faster and also decisions need to be made faster than before. In addition to the speed of information also its amount is growing exponentially. According to Koski (1998: 2) the amount of printed information doubles every five years which brings a great challenge for effective management of an organisation. Thirdly, many of the markets are going through a phase of deregulation. Several industries like telecommunications or energy industry that previously were protected, state related sectors, are opening up for competition and thus there is an increasing need for timely, reliable information of the environment.

An important area of decision making where effective business intelligence is needed is the international market selection in which all the internationalising companies occasionally need to get engaged. Today the degree of success in selecting international markets influences not only future growth potential but in many instances the company's ability to survive. The errors in international environment can many times be far more costly both in monetary and

psychological terms than in home. The wrong choice of market is affected by two types of costs: the actual cost of attempting to enter the wrong market; and the associated opportunity cost, i.e. the missed chance of entering markets where the company could have succeeded. (Bradley 1995: 259-260)

Business intelligence as a systematic aid for decision making has been adopted quite recently amongst the Finnish companies. So far it is only the biggest companies which have created this kind of function inside the organisation as most of the large Finnish companies like Outokumpu, Tele and Nokia have adopted this concept only during 1990's (Fakta 1997/11: 71-76, Nevanlinna 1998, Pesonen 1998). There is, however, a growing interest towards business intelligence and an increasing number of companies attempting to systemise their information processing. Consequently one of the major motivations for this study is the need of research on the subject from the side of Finnish business circles.

One reason why this study concentrates in power generation industry is the fact that the recent internationalisation of this industry is a good example of sudden changes in the business life when business intelligence needs to be effective. According to Hackleroad (1998) in a study of the Fortune 500 companies in the United States chemical and telecommunications companies rated their intelligence systems highest, while utilities graded theirs' lowest. Therefore it seems that there clearly is a need to develop the Business intelligence knowledge in this sector.

1.2 The purpose of the study

The aim of this study is to examine how can business intelligence be integrated to the decision making process of a company selecting foreign markets to penetrate. The challenges that are to be solved are: what is the decision making process like in international market selection and what information and how should business intelligence department create to support these decisions.

Research problem

What is the decision making process in market selection like and how can business intelligence most efficiently be integrated to this process.

Research questions:

- What are the phases of a decision making process of market selection?
- Who should be involved in the decision making process of market selection?
- What information should be known to make the market selection decision?
- What should business intelligence system be like to create the needed information?
- Who should be involved in creating the information?
- What are the phases of creating the needed information?

By answering these research questions the author expects to increase the understanding of the phenomenon studied and thus benefit both the management of the case company and the academic circles. The author also wishes that this study will present new insights and additional information to the concept of market selection and the related business intelligence.

1.3 Structure of the study

In this chapter the order of the study will be presented to the reader to facilitate the following of the study (see figure 1). The introduction chapter includes the formulation of the research problem and the related research questions, specifying certain concepts essential to the study and drawing delienations to the scope of the study.

In chapter two the theories from existing literature will be presented to give a base for answering the research questions. The presentation of existing literature is

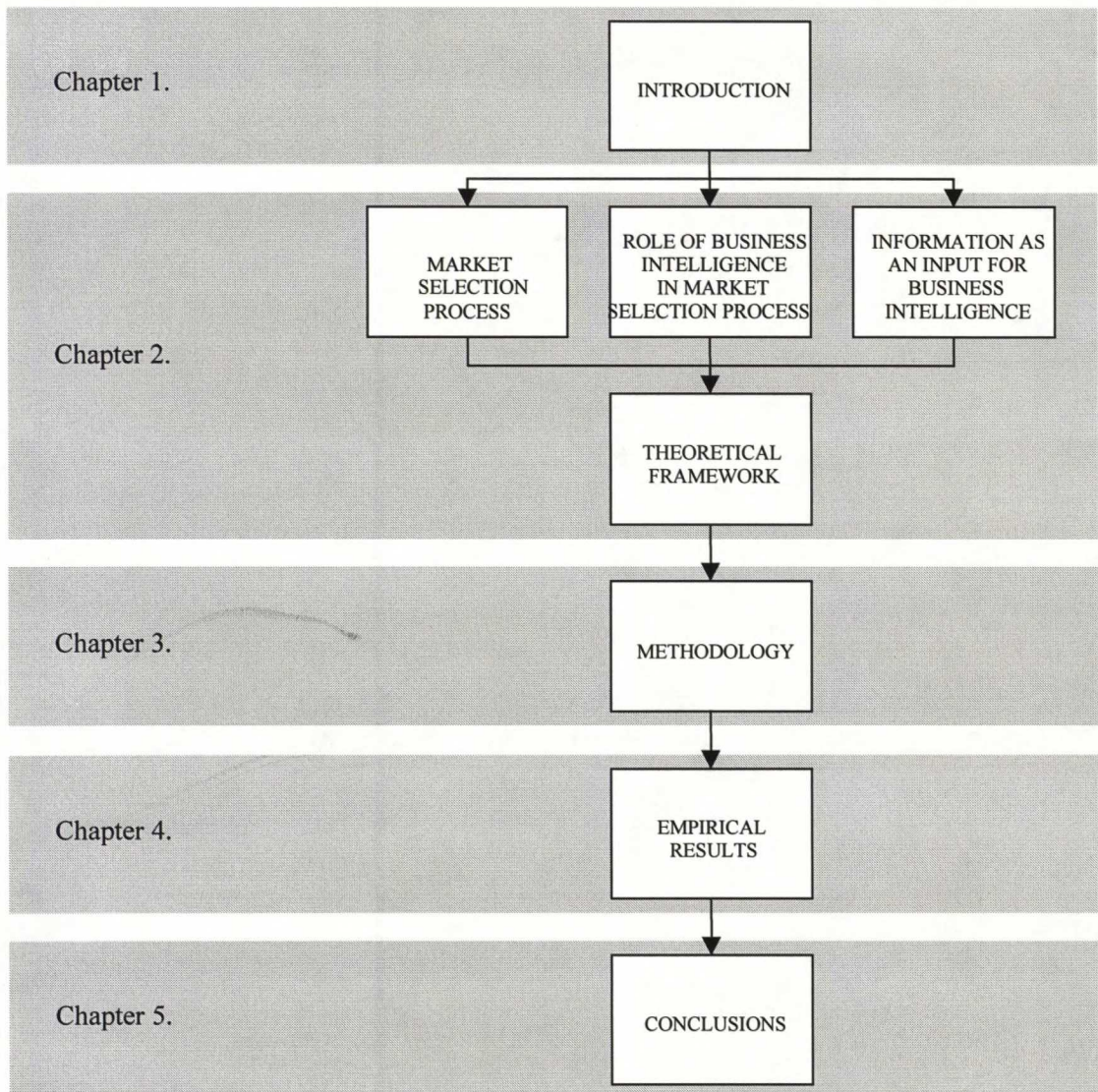
divided in three parts: (2.1) market selection, (2.2) role of business intelligence in market selection and (2.3) information as an input for business intelligence. In addition to theories of market selection chapter 2.1 includes theories of strategy formulation of which market selection is part of and of decision making process through which market selection decision is made. Chapter 2.2 covers widely the concept of business intelligence as a means to create a base for market selection decision. In chapter 2.3 the role of information as an input for business intelligence is further analysed. This chapter could also have been part of the business intelligence chapter but the author considers the role of information so crucial especially in the light of the research questions that it deserves a chapter of its own. In the end of chapter two (2.4) a theoretical framework of market selection will be created based on the presented literature.

Chapter three is the methodology part where the emphasis is in describing the methods used in conducting the empirical research. It includes the research design, the analysis of the data and analysing the validity and reliability of the results of the study.

Chapter four presents the results of the empirical research conducted. Chapter 4.1 presents the case company, chapter 4.2 describes the historical experiences in the case company and in chapter 4.3 a cross case conclusion will be made and a model for market selection in the case company will be formulated. In chapter 4.4 the model and especially the business intelligence process in the case company will be further specified.

Finally in chapter five the conclusions of the study will be presented. It includes comparing the theoretical model to the model used in the case company as well as the implications of the findings to management.

Figure 1. Structure of the study



1.4 Limitations

Business intelligence and decision making as concepts are very broad ones, which is why there needs to be made some limitations to the scope of the study. The concentration is on studying business intelligence as a means of creating value for the decision makers related to market selection decision. The intention is not to

create a profound model of what should the modern day business intelligence system be like as a whole or how should it be implemented.

The practical methods of collecting, analysing and disseminating the information will not be the main focus of the study because they are commonly very dependent on the industry, the company in question and the information needs respectively. Of course they cannot be ignored completely because they are an essential part of a business intelligence system. However, they will only be covered on a very general level; not for example to the depth of listing good information sources or efficient database software.

Furthermore the information technology questions related to business intelligence system will not be dealt with in detail. However, even though the technical questions of databases will not be addressed the use of information technology needs to be addressed to some degree because quite often the business intelligence system can not work without the aid provided by modern computer based technology.

Finally, in this study the emphasis is studying the role of business intelligence in market selection in power generation industry. Even though the results might apply also for many other, especially very investment intensive, industries the conclusions are drawn only for power generation industry.

1.5 Definitions

The terminology used by practitioners and academic circles related to business intelligence is very colourful which is why some specifications in the use of terms is needed. Firstly we need to define what is intelligence, what are its components and furthermore what is business intelligence. The basic component of intelligence is **data** which according to Pearce (1976: 118) is defined as:

Data should preferably be thought of as components of information.

In other words data is the small piece of information which by itself is useless but when these pieces are put together it creates meaningful information.

Information then again has been defined as follows:

Information is the raw material of the intelligence process. It is unevaluated, unanalysed data derived from every possible source of information. (Sammon in Sammon, Kurland & Spitalnic 1984: 91, Eels & Nehemkis 1984: 75)

Like already expressed in the definition of information, intelligence is the final stage of the of the process of turning the small pieces of data into information and further to intelligence. The definition of **intelligence** then becomes:

[Business] Intelligence is the co-ordinated-across-the-entire-organisation activity of keeping under surveillance whatever parts of the entire environment the organisation decides to monitor, in order to bring about a systematic collection and analysis of competitive intelligence to serve the intelligence needs of the organisation as a whole. (Gilad 1989:32)

In some publications a term **competitive intelligence** is used instead of business intelligence, but in this study and also in practice these two terms have exactly the same meaning. Also terms **marketing intelligence**, **competitor intelligence**, **technical intelligence** or **customer intelligence** are frequently seen in the related articles. They can be seen as parts of business intelligence concentrating in some specific field of information like competitors or markets etc. where as business intelligence already contains all of these areas.

Finally **business intelligence system** which is later used in this study shall be defined as any set of procedures that turns the pieces of data concerning the company's competitive situation into an actionable intelligence.

2 THEORETICAL FRAMEWORK FOR THE STUDY

2.1 Market selection

Market selection is one of the basic strategic decisions a company needs to make in order to pursue its organisational goals. It is exceptionally important for an internationally operating company to select the geographical locations for its activities because it can have a profound effect on the company's performance. Chapter 2.1 is going to address the market selection decision and the related decision making process as part of the master strategy which is formulated in every organisation within certain intervals.

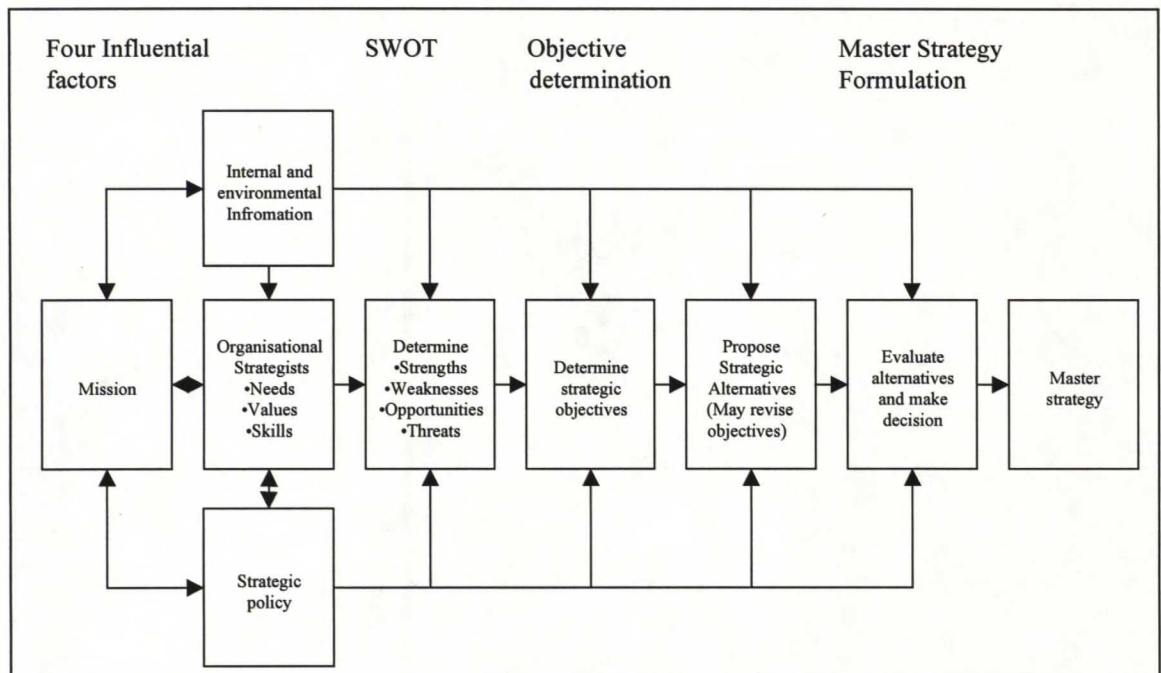
2.1.1 Strategy formulation

The only way for a business organisation to assure its continued competitive viability, profitability and growth is to manage the company strategically. (Sammon & Kurland & Spitalnic. 1984: 14). Higgins (1985: 3, 194) states that

Strategic management is the process of managing the pursuit of organisational mission while managing the relationship of the organisation to its environment. The role of the top management in strategy formulation is to review both policy and information related to internal factors and the external environment and then, through rational decision making, to translate mission into more specific objectives and establish major plans of action to reach those objectives. (See figure 2.)

As is suggested in figure 2. the strategy formulation is a process starting from the company's mission leading to the master strategy through several sequential phases. According to Higgins (1985: 206) the strategic decisions in organisations are commonly made in a series of small steps. This *incremental decision making* is due to people's limited problem solving capacity, their lack of information, the impact of their values on decisions, the openness of systems, the high cost of total

Figure 2. Objective Determination and Master strategy formulation.

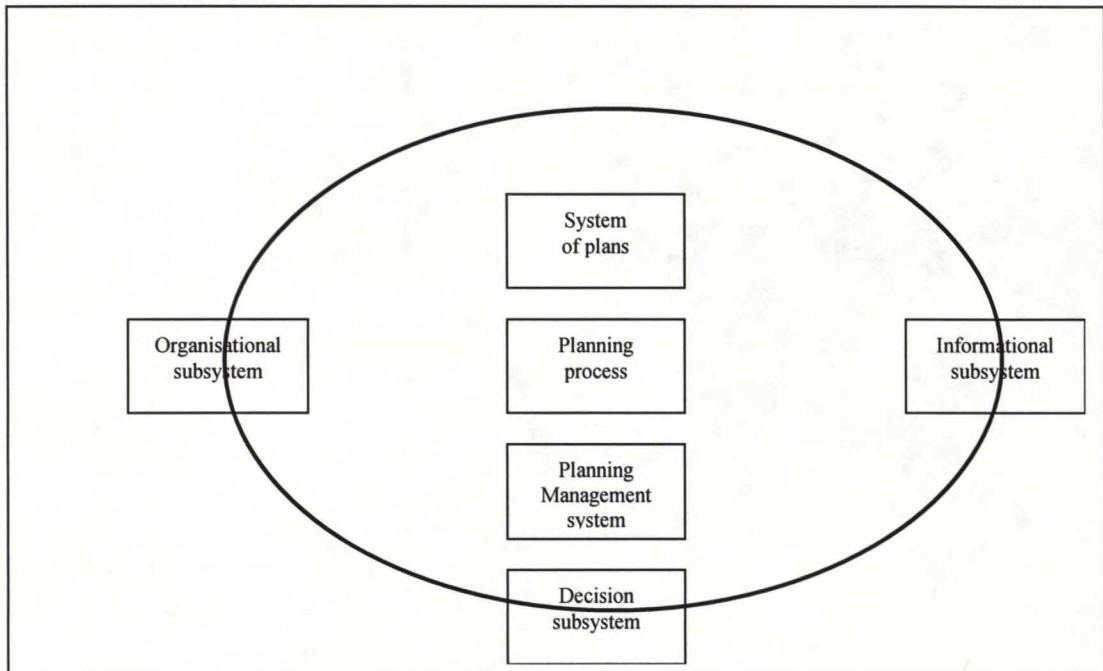


Source: Higgins (1985: 7)

rationality, the need for sequencing of decisions and the variations in policy problem situations. According to Mintzberg (1995: 14) the strategy intended is quite commonly not even realised as such but is affected by emergent strategies on the course of the process. What is noteworthy, however, is the fact that each of the phases in the strategy formulation process is being influenced by internal and environmental information.

An essential part of strategy formulation is a strategic planning system. According to King & Cleland (1978: 24) the strategic planning system can be thought of as being composed of several subsystems (See figure 3.). An essential feature of the model presented in figure 3. is the fact that in the centre of the system is a formally organised process which combines together the various sub processes like informational, decision or organisational sub processes. In some cases the planning-decision subsystem does not need to be entirely formalised. Many strategic decisions need to be made without the aid of models because they are

Figure 3. Elements of strategic planning system.



Source King & Cleland 1978: 22

unique or because appropriate models cannot be developed within the time and cost constraints under which the choice is being made. However, systemisation does generally make the process more efficient. (King & Cleland 1978: 30)

As mentioned earlier a well developed information subsystem is crucial for effective planning process. Many planning failures are caused by a lack of supportive information relevant to planning. According to Zabriskie & Huellmantel (1994: 109, 115-117) 60 % of strategic plans fail because the strategies cannot be implemented profitably. They argue that the weakest link in successful strategic planning process is the strategy formulation which is largely due to incapable marketing research and strategic information production. King & Cleland (1978: 31) argue that much of the information currently possessed by organisations is descriptive of the history and inwardly directed. To aid strategic planning information has to be prospective and focused towards environmental and competitive forces that will most critically affect the organisation's future.

Information concerning future political, economic, technological, social and legal forces must be assembled and analysed to build assumptions about the future.

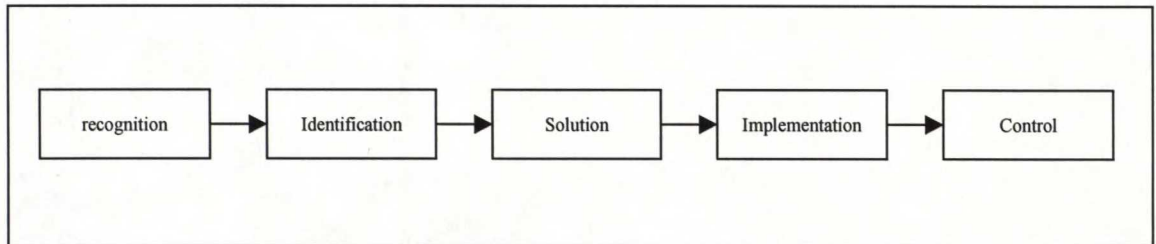
One of the branches of industry where there is a growing need to improve strategic planning is the power generation industry which is opening up to competition all around the world. Whelan and Sisson (1993: 31,32) conducted a study of 97 investor owned US electric utilities of the level of strategic planning usage amongst them. 74 % of the respondents said they engage in formal strategic planning but according to the research the true figure is somewhere much lower between 20 % and 50 %. The authors argue that the false belief of strategic planning can create blind spots which become a true problem as the deregulation progresses and the utilities become faced with competition. So far the regulated environment has limited the need for external information, but as the foreign competition increases the external perspective becomes greater than ever.

2.1.2 Decision making process

A lot of the strategic planning literature is devoted to the planning process and the procedural aspects of planning where as the decision making aspects are de-emphasised. King and Cleland (1978: 123) argue that in it's essence planning is decision making. Decision making is the most important of all of the activities in which managers engage. It is through decision making that the other functions of the management are accomplished. A decision is a choice among alternatives, but decision making is usually seen as a five step process: recognition, identification, solution, implementation and control (see figure 4.). In the recognition phase the decision makers become aware of a problem, which is commonly caused by internal factors or an opportunity, which in turn commonly results from environmental factors. In the recognition phase the problems and opportunities are not well understood, but the decision makers simply become aware of the existence of the opportunity or problem. In the identification phase the problems or opportunities are better defined and in the solution phase alternative objectives and solutions are generated. The evaluation is done by using information gathered

over the subject. Finally comes the decision making phase which then has to be implemented and be subject to control. (Higgins 1985: 191-192)

Figure 4. Basic decision Process model.



Source: Higgins 1985: 194

The presented five stage model is of course an oversimplification of the decision making process which in reality is a highly complex process. Decision making occurs always within constraints, which include psychological, environmental and decision-related factors. Psychologically the decision maker is constrained by his or her own personality: primarily needs, but also knowledge, risk propensity, aspirations, values, skills, experience, perceptions and limited cognitive ability. Environmental constraints include organisational factors such as objectives and policy, organisational environment and structure, reference groups and their dynamics and roles. Decision making related factors include the importance of the decision, the time in which the decision must be made, the information available and the involvement of multiple decision makers. Resulting from these various constraints the decision making process needs extensive attention from the side of the management. (Higgins 1985: 192)

An important question is how are decisions actually done. Davis & Olson (1985 166) state that part of the decision making process is to realise a difference between an existing situation and a desired state. Pounds (1969: 1-19) identifies four models which produce expectations against which reality is measured.

1. Historical models in which the expectation is based on extrapolation of past experience

2. Planning models in which the plan is the expectation
3. Models of other people in the organisation, such as superiors, subordinates, other departments, etc.
4. Extra organisational models in which expectations are derived from competition, customers and professional organisations

Of course before being able to define the desired state one has to clearly define and clarify the problem, so that you operate on the "right" problem. According to Davis & Olson (1985: 166) four methods for reducing complexity and formulating a manageable problem are:

1. Determining the boundaries (i.e. clearly identifying what is included in the problem)
2. Examining changes that may have precipitated the problem
3. Factoring the problem into smaller sub problems
4. Focusing on the controllable elements

In real life situations one obstacle for systematic problem identification is the fact that many times the decisions are made ad hoc and based on feeling. In studying 33 cases of strategic problems Lyles and Mitroff (In Higgins 1985: 197) found that 80 % of managers believed themselves to be aware of the problem before formal indicators, such as financial figures, indicated the existence of a problem, or before a superior or subordinate brought the problem to their attention. This implies that much of decision making occurs as the result of, first the use of informal information sources, and second, the use of intuition for recognition.

After clarifying the real problem and defining the desired outcome the next significant part of the decision making is the generation of alternatives to be considered in the choice phase. In this phase an important factor is creativity, which can be enhanced through scenarios, analogies, brainstorming, checklists, templates of decision process, etc. (Davis & Olson 1985: 167)

As was already stated in chapter 2.1.1 about strategy formulation it is many times done in small steps. This is also true for decision making processes. When decision makers do not have the authority to make a decision, they must seek for the approval from higher levels in the hierarchy. Decision making processes may be repeated as the issue progresses upward through the decision levels of the organisational hierarchy. Often, however, the higher level decisions may be abbreviated as the higher level decisions are based on lower level recommendations. This is called incremental decision making. (Higgins 1985: 206)

2.1.3 Market selection as a strategic decision

Many of today's companies are no longer restricted on operating in one country or a market. A large proportion of for example Finnish companies are acting internationally or globally and many times a major proportion of their turnover is dependent on the international sales. Therefore one major decision a company needs to make is to choose the markets where it wants to operate. This may have a profound effect not only on the future growth potential but also on the survival of the company in the increasing global competition.

Market selection is to be considered as a strategic decision which can differ substantially in different companies. According to Bradley (1995: 263) the identification of opportunities to internationalise and choose the markets can be done in three ways. The first, opportunistic, approach is characterised by random or casual market identification and the decision is made following a certain stimuli which brings the opportunity in the awareness of the company. The second, systematic, approach is characterised by systematic comparison of prospective markets and entering the markets through a well planned process. The third situation involves a combination of these two methods: an opportunistic approach which on refinement and testing evolves into a systematic approach. Undoubtedly all of these different methods are being used in business organisations internationalising but some authors argue that the systematic way

should be the goal to pursue. According to Tookey (1975: 51) approaching the international market selection in an intuitive rather than a methodological manner can cause many problems of co-ordination due to country differences and therefore the decision should be taken in a systematic way.

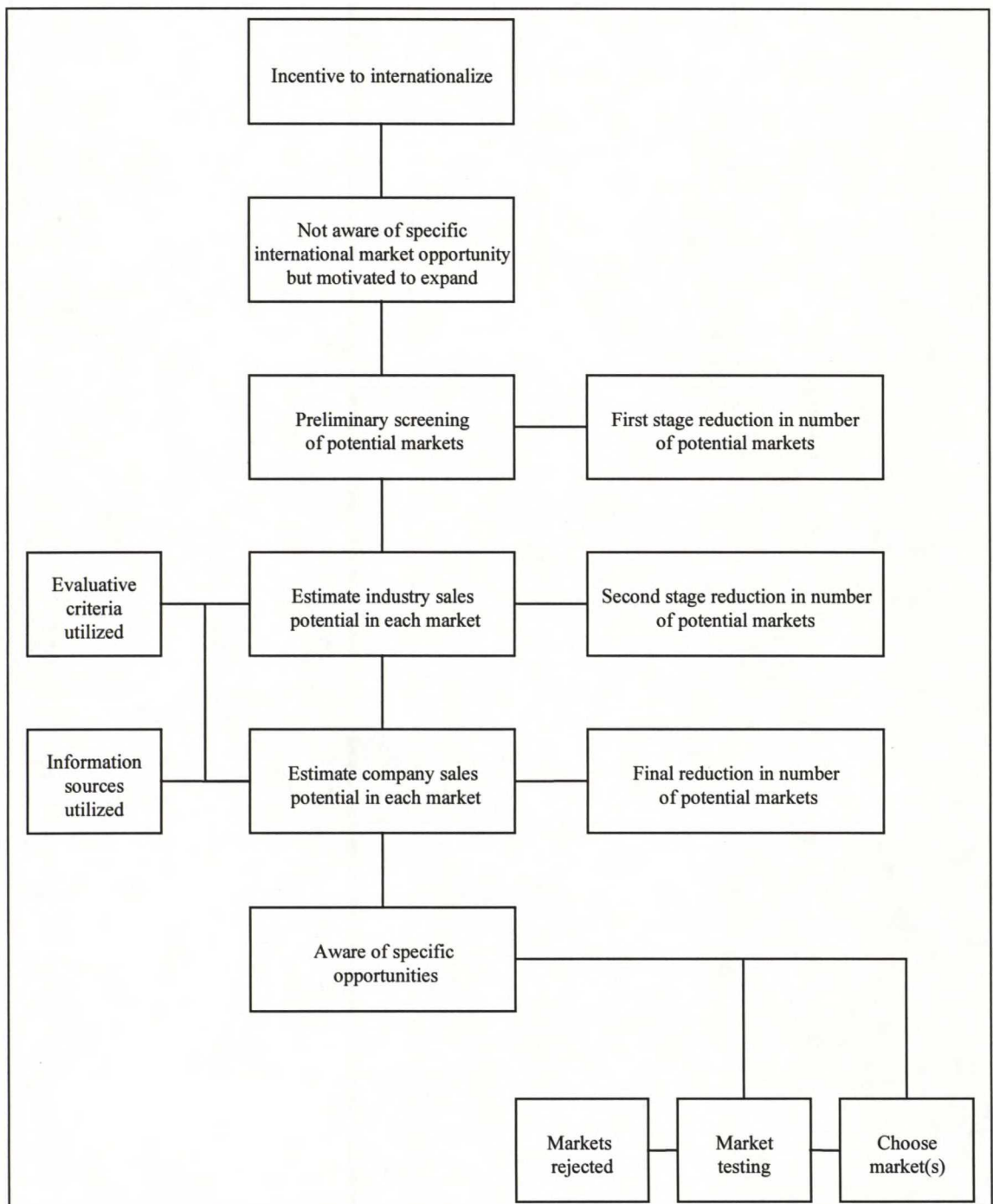
The systematic market selection is mainly concerned with establishing a criteria for selection, researching market potential, classifying them according to the agreed criteria and selecting those which should be addressed first and those suitable for later development (Bradley 1995: 266). As was already mentioned in chapter 2.1.1 many of the strategic decisions are being done in a series of small steps and this is the case also with the market selection decision. A model for the systematic market selection process can be seen in the figure 5.

Each of the phases in the market selection process (in figure 5) has a purpose in iterating the suitable market to penetrate. According to Root (1982: 33,34) the purpose of the preliminary screening is to identify countries which size warrant further investigation. This phase tries to minimise two errors: that of ignoring very potential countries and that of spending too much time on countries with poor prospects. The preliminary screening is therefore quite broad in nature and relies much on quantitative data which is readily available for most countries and comparable across countries. Bradley (1995: 266) argues that the criteria that should be applied can be categorised under three major headings: physical and geographical features of the market, demographic profiles and local economic conditions. After the preliminary screening a decision to reduce the number of markets to be investigated has to be done. The decision involves, according to a set of predetermined criteria, selecting the most potential markets of which the evaluation is taken further.

According to Bradley (1995:267) the next stage of the systematic market selection process is to examine the total potential for the product category in each promising market. Two approaches may be used here: the so-called naïve model which involves a simple projection of historical situation to the future; or a causal model which includes considering several variables and construction of a product

sales forecast for each market. According to Garland, Farmer and Taylor (1990: 69) the important factors to be found out in this phase are the environmental constraints like educational, legal, behavioural, social and political affecting the company.

Figure 5. Systematic approach to international market selection.



Source: Bradley 1995: 265

Again after estimating the industry sales potential of each market the company has to make a decision of which countries to select for further development and which to forget or to put on hold.

During the next stage the company tries to define the most probable sales that the firms product in a designated country can attain over a strategic planning period. Important aspects of this stage are analysing the market structure like the degree of monopoly, distribution channel structure, doing the SWOT-analysis and considering the cultural aspects of the country in question. A major concern of this phase is also to evaluate the competitive situation of the prospective market and evaluation of the strategies of competitors. The competitors should be carefully evaluated from the point of view of their share of the market, their size, resources and pricing policies as well as the company's strategic positioning related to them. (Bradley 1995:270). Garland, Farmer and Taylor (1990: 69) include into this phase the consideration of what should be the product range sold to this market and should they be adapted or not. After estimating the company sales potential in each market a final reduction in the number of potential markets has to be made and the chosen market(s) taken to the phase of market testing. Finally based on the market testing a decision to choose a market or reject it can be made.

A very similar approach has been taken by Gavusgil (1985: 27-33) who defines the three phases of researching foreign market potential as preliminary screening for attractive country markets, assessment of industry market potential and company sales analysis. These are also the three major phases in the model of Bradley before the decision to choose or reject the markets is being made. Also Root (1987: 34) and Garland, Farmer and Taylor (1990: 69) have described the market selection model of including these three information gathering phases and a decision to accept or reject certain number of markets always in between the information gathering phases.

In figure 5. each of the decisions to reduce the number of potential markets is based on the intelligence derived from actionable information of the markets and

thus estimating the company's potential competitiveness in that market. To get this intelligence you need to utilise a varying set of information sources which will be dealt with in detail in chapter 2.3. The chapter 2.1.4 gives an overview on what is the role of business intelligence in strategy formulation and thus also in the market selection decision.

2.1.4 Role of business intelligence in market selection decision

Any decision, especially strategic decision can be only as satisfactory as the information upon which it is based. Therefore an information system that provides accurate, timely and relevant information for use in the strategic decision making process is an important organisational resource. Without an efficient business intelligence system executives can virtually be overwhelmed by huge loads of information. Information has two primary roles in objective setting and strategy formulation. First, information indicates the existence of strengths, weaknesses, opportunities and threats. Second, information on the strengths and weaknesses of the organisation in relation to the environmental opportunities and threats is used to set objectives and formulate strategies according to the fit between the internal and external forces. It is the task of strategists then to generate and evaluate alternatives based on this information. (Higgins 1985: 43,50)

The information needed to support strategic decision making differs in number of fundamental characteristics from the routine operative information. Strategic information tends to be qualitative, aggregated and external to the company. It is often communicated on an informal basis. Furthermore it is often not readily available inside the firm and through the company's traditional information system which leads the organisation to secure new and different types of information sources. (Rhyne 1987: 387, 389)

One common question among academics is what should the relationship between business intelligence and strategy process be like. Herring (1991: 49) argues that good intelligence requires systematic collection and dedicated analysis to keep up

with the constantly changing environment in which customers, suppliers, and competitors operate. According to Rhyne (1987: 403) identification of factors and evaluation should take place on an annual basis just prior to the initiation of the strategic planning process. Some authors argue that strategic planning and environmental scanning should be an ongoing process but Rhyne suggests that performing these tasks periodically provides the following advantages: (1) Managers are more likely to set aside the time needed for reflective consideration of issues and (2) if a reasonable period of time has passed since the last review, changes are likely to be more evident. A very short review cycle often leads to conclusion that nothing much has changed and no adjustments are required.

According to Higgins (1985: 45-49) the internal information of organisations strengths and weaknesses can best be obtained through a total management audit which should cover every function of the organisation and be performed annually. It should answer questions like where the company is, where it wants to be, why isn't it there and how can it get there. Most organisations plan strategy on an annual, cyclical basis and therefore in an ideal strategic decision situation, the processes of information gathering and analysis as well as data storage and reporting, would be accomplished in the formal information system, preferably under the direction of members of the planning group. However, Higgins states that sometimes strategic decision making is crisis oriented which is why a lot of other information not normally used should be stored in order to meet the demands of various situations. Also the importance of informal information over formal information should not be overlooked. many times personal contacts with individuals outside the organisation can provide valuable information for the decision making.

According to Prescott and Smith (1987: 411-412) a comprehensive, ongoing approach is valuable to broad strategic decisions while its usefulness for specific problems may be limited. They argue that for project oriented decisions also business intelligence function should apply a project based approach to the problem. In other words the evaluation of strengths and weaknesses of the company itself as well as the external information collection should be directed to

the specific problem. This way the results can be immediately directed to the strategy formulation process and the cost-per-unit of information can be lowered. Also market selection process as well as being a broad strategic decision can be categorised as what Prescott and Smith (1987: 415) define "strategic projects" which include geographical expansions, acquisitions and capacity expansions. Therefore market selection requires more specific and clearly focused approach than regular strategic decisions.

2.2 Role of business intelligence in decision making

2.2.1 Tasks of business intelligence

Quite common belief is that business intelligence is mostly used in supporting decision making and strategic planning. The research made by Ghoshal and Westney (1991: 24-25) support the fact that these two functions are the most important users of business intelligence since two thirds of the cases they studied belonged to these two groups. However, they found that there are six ways how business intelligence can benefit the organisation; In addition to decision making and strategic planning the benefits are: sensitisation, legitimisation, benchmarking, and inspiration. Sensitisation means that the employees of the company are made aware of the fact that there exists a competitive threat outside, against which a continuous development of processes is required. Benchmarking provides a set of specific measures comparing the firm with it's competitors while inspiration brings new ideas from competitors or other sources to the employees of the company. The final use of business intelligence mentioned here is legitimisation: that is to justify certain proposals and persuade other members of the organisation to choose a particular course of action.

One of the basic assumptions of business intelligence is the fact that the information given is exactly correct for the problem in question. This is why

different decisions in the organisation require different level of intelligence. Pearce (1976: 123) identifies three levels of business intelligence:

1. Strategic intelligence: Long range decisions. e.g. company's goal
2. Tactical intelligence: Middle range decisions. e.g. allocation of resources.
3. Operational intelligence: Short range decisions.

Strategic intelligence is a long-range analysis of all environmental factors which can effect the marketing position of the firm. Activities include the interpretation of events and trends such as social and political changes, science and technology and competitive intentions. Tactical intelligence is designed for creation of competitive tactics of the company related e.g. to changes in advertising, prices, term or conditions. Operational intelligence then again is related to the everyday decision making and the information to back these decisions. Jaffe (1979: 54) also includes to the list counter-intelligence which means the methods designed to neutralise competitors intelligence systems and keep the trade secrets inside one's own organisation. (Jaffe 1979: 54-55)

In each of the above mentioned levels the intelligence system needs to answer certain questions in order for it to be useful for the users. According to Herring (1992a: 56 - 60) the role of intelligence in the formulation and implementation of strategies falls into six basic categories:

1. Describing the competitive environment
2. Forecasting the future competitive environment
3. Challenging the underlying assumptions - Asking the right questions
4. Identifying and compensating for exposed weaknesses
5. Using intelligence to implement and adjust strategy to the changing competitive environment
5. Determining when the strategy is no longer sustainable

Czinkota, Ronkainen & Moffet (1994: 389) have defined the important uses of international research and intelligence as identification, evaluation and

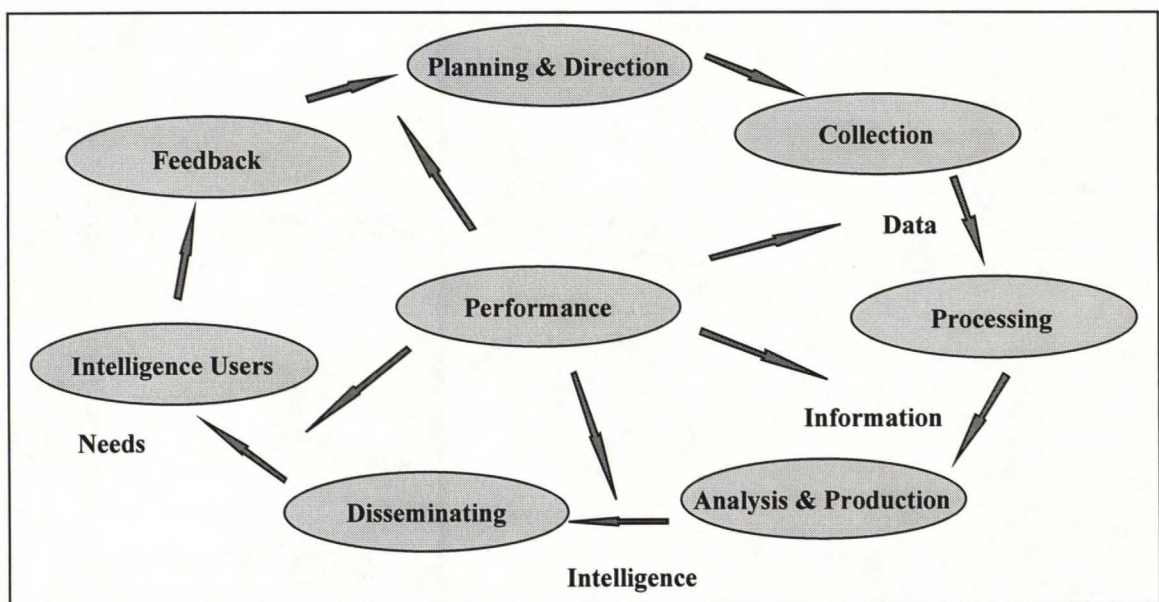
comparison of potential foreign opportunities related to market selection. An important function is also the development of a business plan for the market based on the information acquired. Furthermore one of the important functions of information is to give a base for fine-tuning the business activity to the right direction depending on the changes in the external environment.

As we can see business intelligence is an essentially important tool for giving the means for making strategic decisions and anticipating the environment to understand the markets and competitors. In the next chapter (2.2.2) the process of creating business intelligence will be dealt with in more detail and the different phases of creating intelligence are described.

2.2.2 Business intelligence cycle

Transforming the raw data into intelligence which is then used in decision making is a continuous, developing process which can most efficiently be described as a business intelligence cycle (figure 6.). The underlying assumption in this model is

Figure 6. Business Intelligence Cycle.



Source: Nevanlinna 1998

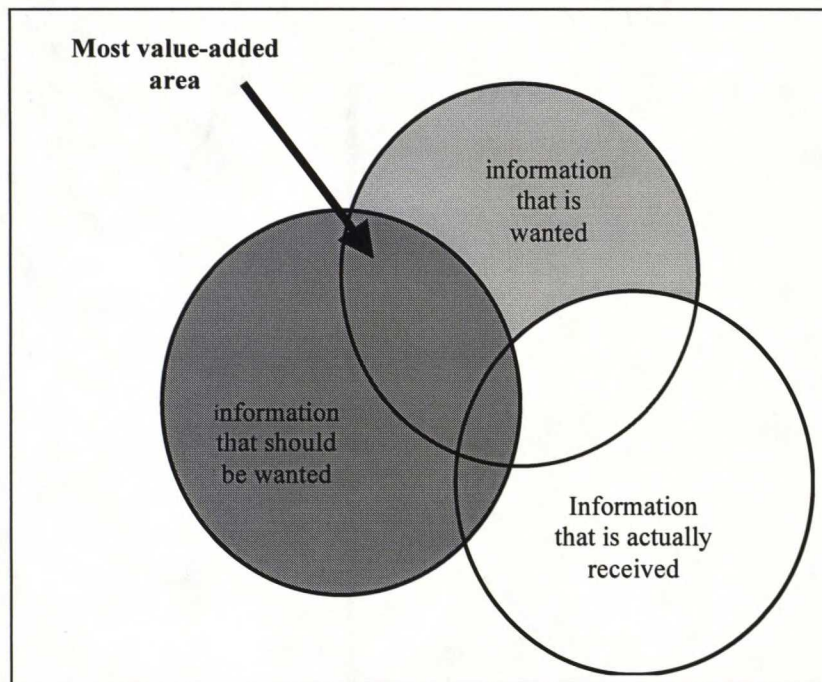
that the incentive for the information gathering comes from the side of the information users who have a certain need for additional information. The intelligence function then after analysing the needs collects the data systematically. The data is then processed into information and after additional analysing created into intelligence. The intelligence is further disseminated to the final users who give feedback and thus contribute to the continuous learning of the business intelligence system.

2.2.2.1 Intelligence needs

It should be noted that intelligence is not an end in itself but is acquired to be used in decision making or otherwise taken advantage of. Therefore, a starting point for business intelligence gathering should always be a need from the information user whether he or she is aware of it or not. However, all the possible information needed for the decision making can never be supplied due to various reasons like limited time, availability or cost. Therefore, the decision making and problem solving in organisation is always based on imperfect knowledge of the situation. Furthermore there is a large amount of ambiguity in defining the needs from the side of decision makers. Quite often the management is not aware of all the information they need in order to be able to make the decision. Similarly much of the information demands they present to the collectors might be of no use to the decision making and collecting it would therefore be in vain. The relationship of information demand, supply and what actually should be demanded is illustrated in figure 7. (Pirttilä 1997: 46-47)

From figure 7. can be seen that the information supplied is not necessarily the one which is needed or even the one which is demanded. However, not all the relevant information should be collected. The most value-added information as illustrated in the figure is the one which is demanded and also should be demanded but is not yet supplied by the normal information channels. This way the essential

Figure 7. The relationship between competitor information needs, demand and supply.



Source: Pirttilä 1997: 46.

information needed will be covered and if it is also the one the management has requested for so it is sure to be used in the decision making.

According to King & Cleland (1978: 255) the data gathering can be divided in two partly overlapping types of information:

1. The continuing collection of basic data for general encyclopaedic intelligence or for maintaining a continuing awareness of the factors and forces in the competitive system.
2. The collection of specific items to fill critical information gaps in the intelligence base or to meet special requests for competitive information from a particular user-manager.

On the basis of the previous it can be argued that also the needs of information are twofold: to give a broad understanding of the competitive environment and on the

other hand to provide answers to specific questions from managers or other information users.

2.2.2.2 The intelligence collection plan

Bernhardt (1994: 16) has defined about the competitive intelligence process the following:

The competitive intelligence process is a focused, intellectually exhausting, user driven activity, and must be managed accordingly.

As the phrase says one of the important aspects of the business intelligence process is the management of the whole system. The collection phases of the overall intelligence cycle include the guidance, preparation and transmittal of the collection plan (along with goals and objectives) to those people and agencies responsible for the actual gathering of data. A competitive intelligence plan relates information needs to potential information sources in a way to prescribe and delimit the information screening process (King & Cleland 1978: 255)

Before any intelligence program is implemented a clear planning and direction is needed. Bernhardt (1994: 14,16) argues that the intelligence collection plan needs to include the following items:

1. The intelligence consumer must articulate an explicit intelligence need and the objectives need to be defined.
2. Various responsibilities for collection, analysis etc. must be delegated to executives, researchers and analysts.
3. Financial and other resources need to be allocated.
4. Consultants if they are involved have to be briefed.
5. Time scales have to be agreed on.
6. Preliminary information sources should be identified.

According to King & Cleland (1978: 255) in the guidance phase the action is usually initiated by the intelligence office which in turn gets the means for providing the guidance from for example the following sources:

- Intelligence office's statement of organisational mission
- Various plans that exist in the organisation
- The user-manager and his staff
- From higher, lateral and subordinate organisational levels

In designing the intelligence collection plan one has to take into consideration several aspects of information collecting. Typically employees hear and see a great deal of critical information but are unaware of its importance. And even if they understand the importance they may not know who should receive it. Information has also some specific features related to it. The same external data can be very easy to acquire in one point of time and almost impossible at another. For example companies are not likely to reveal their hand during the strategic planning cycle (Fuld 1991: 16). A salesman because of his frequent contacts with customers and other salesmen is one of the best sources of information. However, his view is often subjected to half-truths and misleading information which is why his information should be cross-checked and verified from other sources. (King & Cleland 1978: 256)

2.2.2.3 Information collection

One of the biggest questions in business intelligence is how can a firm obtain the information it needs for strategic decision making. Answer is to focus on the information which has a major impact on firms performance. According to King & Cleland (1978: 229-230) the internal information inside organisation is generally easily available and adequately known to the managers. However, little attention is devoted to the more difficult task of systematically developing externally oriented information systems. The bias in favour of internally oriented

systems is natural and easily understood. First, the internally oriented information is easier to obtain. It needs to be routinely produced because a lot of that information needs to be presented to the authorities. Even more important reason for the bias results from what is being considered as good management. Historically it has meant good administration of the organisation and therefore the internal information played a major role. However, today the role of management is seen some what differently. Good management is measured in terms of opportunities lost or used in advantage. In such milieu environmental information becomes of paramount importance and is hence critical to strategic planning and decision making.

According to Keegan (1995:228) there are two important modes of information gathering: surveillance and search. (See table 1.)

Table 1. Scanning Modes.

Modes	Coverage
Surveillance Orientation	
Viewing	General exposure to external information where the viewer has no specific purpose in mind other than exploration
Monitoring	Focused attention, not involving active search, to a clearly defined area or type of external information
Search orientation	
Investigation	A relatively limited and informal seeking of specific information
Research	A formally organized effort to acquire specific information, usually for a specific purpose

Source: Keegan 1995: 229

In surveillance the information collector only gathers information that crosses his or her scanning attention field. Surveillance is further divided into viewing and monitoring which differ in terms of how specific the need for information is. In search the scanner is deliberately searching for information either informally (investigation) or through an organised research project (Research). Consequently determining the surveillance mode depends on two factors: (1) the extent how actively the collector acquires information and (2) the collectors attention state at the time of acquiring information.

A study of multinational US companies by Keegan (1995: 228-229) revealed that the information acquired by headquarters' executives is mainly done with the surveillance orientation and furthermore by monitoring a specific phenomena but without an active, formal research (See table 2.). On the other hand the study showed that only four per cent of the information acquired is received by means of a formal, specific research. The author argues that this is mainly due to two reasons: The fact that managers are continuously exposed to information which is not included in the formal plans and secondly, the reception of managers for this kind of information. According to Maltz and Kohli (1995: 3-4) a fairly equal mix of formal and informal intelligence dissemination methods maximises the effectiveness of information usage. In other words they argue that formal or informal communications themselves are less effective than a judicious mix of the two.

Table 2. Relative importance of Scanning modes in acquiring Global information.

	Percent of Information Acquired	
Surveillance		73
Viewing	13	
Monitoring	60	
Search		27
Investigation	23	
Research	4	
Total		100

Source: Keegan 1995: 229

One quite commonly used method for collecting formal information of the competitive environment is a market research. Market research is an important element of gathering information for the implementation of a strategy. It is the gathering of information with the search scanning mode, which means that it includes two different modes of search: Investigation and Research (See, table 1. for definition). Some special characteristics and challenges related to international marketing research are for example the lack or falsity of public data. Furthermore, sometimes the information from different countries may not be comparable because of different reporting methods. (Keegan 1995:235)

Usually committing a marketing research starts by first doing a general, desk-study research and after that a field-study. Bradley (1995: 274) argues that after the initial market research has satisfied the management that (1) a relatively attractive demand exists for company's products, (2) that the firm can cope with the competition and (3) the marketing costs are manageable, the next step is an on-the-spot survey. Amongst the most important approaches to on-site market researches are participating on trade fairs or exhibitions, questioning potential customers, interviewing local consultants or pre-testing the market via free samples.

Market research can be conducted either by in-house staff or by external consulting and market research companies. Buying all or some of the services outside the firm from various service providers is a tempting way of keeping the amount of full-time employees down and the costs variable. Keeping the service in-house is advantageous because the understanding of the key competitors is much higher inside than in any other, even specialised firm outside. Furthermore keeping some services in-house and some outside provides a useful benchmark for the evaluation of both of their quality. (Ghoshal & Westney 1991: 30)

2.2.2.4 Analysis and processing of information

Collected data is not information or intelligence until analysed and interpreted by the substantive experts. Analysis represents the value added form of information that managers use for decision making and strategy formulation. The quality of the analysis depends largely on the credentials that the analyst holds. In business organisations it means that the one having functional responsibility (production, marketing, finance, research and development) is the best one to interpret the particular type of functional information. On the other hand some decisions like determining the strategy of a competitor in penetrating new market should according to the authors be handled by a team of people from different functional areas of the organisation. (King & Cleland 1978: 260)

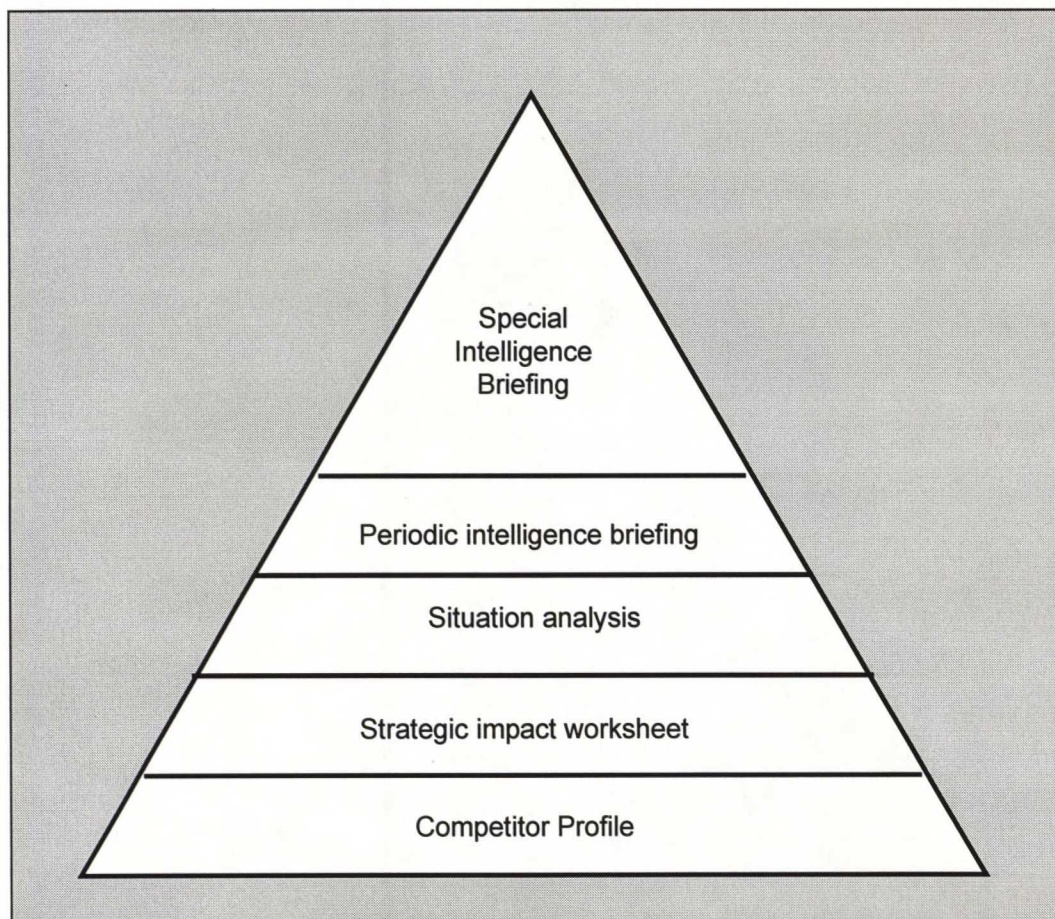
There are several methods how the value added to the information can be created and the analysis task be realised. Different analysis tools include the SWOT matrix, discussion on critical success factors or competitive benchmarking. However, there is no intelligence toolbox to create the results needed. Furthermore the analysis is not enough. Managers must be receptive to intelligence especially if it is not what they expect, or wish, to hear. This is why one of the key functions of the business intelligence people is to talk to the people around the organisation and to motivate them; in other words to harness the power and add value to the capabilities of these "knowledge assets". (Bernhardt 1994: 13,19)

Despite the legal, ethical and public nature of the information sources the reliability of both the source and the content should always be analysed and verified. One possible way is to create a rating system in which each individual information is given a rating of the degree of reliability according to some predetermined rules. (King & Cleland 1978: 261)

2.2.2.5 System output

After analysing the information it is to be disseminated to the one who take use of it in his or her action. The intelligence is usually disseminated in various formats of which one categorisation can be seen in figure 8. The most simple form is a normal competitor profile whereas a special intelligence briefing is of highest strategic value. Intelligence breafing deals with one, or a set of, strategic issues, includes key findings, highlights alternative strategies and offers recommendations. Effective intelligence briefings are decision-oriented, contain supporting information only if relevant to the key issues, and are distributed under strict security guidelines. (Bernhardt 1994: 20)

Figure 8. Hierarchy of intelligence reports.



Source Bernhardt 1994: 21

There is some contradiction between academics and practitioners to how widely the information created should spread inside the organisation. According to King & Cleland (1978: 262,265) an individual should only receive the intelligence which is necessary for him to carry out his managerial duties. Certain information might be very sensitive in nature and should be distributed only to selected individuals. On the other hand some information can be given to all the interested parties.

A competitive intelligence system should also indicate to managers when action should be taken, and provide some indications of the best decision. Furthermore the function should ideally be responsive to some degree to the requests of all functional areas and thus it should be autonomous and not attached to any specific functional area of the organisation. (King & Cleland 1978: 262,263)

It is essential that the business intelligence function has a direct reporting relationship to the line management. One of the biggest problems is the difficulty of getting useful feedback on outputs and establishing clearly the nature of client needs. The practical dissemination can be done orally face to face with managers, in written format or electronically. Analysts generally prefer presenting the results orally because this way they can be presented as tentative. Oral presentation is also one of the rare ways of getting the client feedback and comments effectively and rapidly (Ghoshal & Westney 1991: 27-28). According to Roush (1991: 4) only about 20 per cent of the information managers need in order to make their decisions involves numbers while the other 80 % requires text. This gives additional problems for the sender. It is easy to overwhelm people with data if you send the internal memos to all the people who need only perhaps a part of it.

There exists, however, several methods how the intelligence dissemination can be improved. In table 3. a substantive list of methods that permit content or distribution discretion are presented. One method for increasing efficiency is message modification or filtering of which one common method is message summarisation. It permits the receiver to go through the essential points in much shorter time. Another efficient way of increasing the system efficiency is message

routing. Any particular message is only distributed to those individuals or organisational units that need the information for some action or decision. Furthermore, by message delay the amount of information delivered to the receiver in one point of time can be adjusted and thus the information overload can be avoided. Other methods of improving the intelligence dissemination are e.g. uncertainty absorption, presentation bias or making the information available and not send it but in this case the receiver needs to be active to reach the information. (Davis & Olson 1985: 209-213)

Table 3. Methods that permit content or distribution discretion.

Method	Reasons for use
Message delay	<ul style="list-style-type: none"> • To avoid overload • To distort, inhibit, or suppress transmission
Message modification or filtering	<ul style="list-style-type: none"> • To modify by summarisation • To block certain data by filtering
Uncertainty absorption	<ul style="list-style-type: none"> • To reduce data transmission (by removing recipient from contact with detail data)
Presentation bias	<ul style="list-style-type: none"> • To bias by order and grouping in data presentation • To bias by selection of limits that determine whether items are presented • To bias by selection of graphics layout

Source Davis & Olson 1985: 209

In addition to dissemination of the information the problem of storing it properly must be taken into consideration. The general rule of thumb is to keep the organising and storage of knowledge simple. For example it is not worthwhile to try to create a single, large database to meet all your intelligence goals. Furthermore the databases should be built to serve discrete information tasks and only to assist in the intelligence system, not to replace the human analysis task. They should only be practical means of storing the information and allowing an

easy referral to it when necessary but not the heart of the whole business intelligence system. (Fuld 1991: 15-16)

2.2.3 Evolution of business intelligence systems

Intelligence has its roots in the military. One of the earliest sophisticated references is the Art of War by Sun Tzu (Griffith 1971) which was written around 500 Bc and has formed the basis for the developments in the field of intelligence. Second important era in the development of the use of intelligence is the time of second world war which is linked to the political science around the world. The third stream which is a very recent phenomena is to use business intelligence in business organisations as a means to create competitive intelligence vis-à-vis competitors. (Prescott 1995: 72)

Business intelligence as a systemised important function of a company was introduced in 1960's. At that time its purpose for the company was still very different than what business intelligence is understood to be today. It was seen merely as an information collection department without any analytical function and the linkage to the decision making process was marginal (see table 4.). In the academic field the first researches and practitioner activities were non existent before 1970. In the 1980's the business intelligence function experienced an evolution from a mere library function to a system with more to do with decision making processes. The main fields of interest were the industry and competitor analyses where some analysing was already needed to create the information required. (Prescott 1995: 72, 79-80)

Currently the field has progressed to the point where increasing emphasis is given to the strategic implications of business intelligence system. According to Prescott (1995: 84) the process has also turned into more demand than supply driven, meaning that presently it is commonly the information needs of the decision makers that define the information collected. A second issue that has been

emerging is the focus on counter intelligence. Naturally this has been a stronger area of emphasis in the governmental level but also companies believe that information is power and it should be kept inside one's own organisation.

Even though business intelligence has evolved considerably during the recent decades there is still a large number of companies which have not adopted this function. An annual survey in 1997 by The Futures Group (TFG) found that only 60 percent of US companies with turnover above USD 1 bn have an organised business intelligence system. However, all of them gather intelligence in a wide variety of areas. It also seems that the bigger the companies are the more common it is to have an organised business intelligence system, because of US companies with revenues over USD 10 billion already eighty-two percent announced having this kind of function. (http://www.tfg.com/pubs/docs/O_EIII-97.html)

According to Prescott (1995: 87) some of the future trends in the evolution of business intelligence are that managing the behavioural dimensions of the function become critical. How organisations mobilise the informal business intelligence process will determine their effectiveness. An important factor then becomes how the companies are able to integrate the formal and informal business intelligence activities and thus create an integrated, holistic system.

Business intelligence has been adopted very differently in different geographical regions. According to Herring (1992b: 44,47) the Japanese managers become part of the business intelligence process almost effortlessly due to the nature of their companies consensus building process. Today almost all Japanese companies involved in international business have a centralised business intelligence unit which employs some 10 to 20 people. However the responsibility for intelligence gathering is company wide and business intelligence is valued very high across the organisation. For example the motto of Mitsui Corporation is "Information is the lifeblood of the company". Business intelligence is rather high developed also in some other countries like Sweden where the range of practicioning ranges from

Table 4. The evolution of competitive intelligence.

Characteristics	Competitive data gathering	Industry and competitor analysis	Competitive intelligence	Competitive intelligence as a core capability
Time period	Pre-1980	1980-1987	1988-Present	Future
Degree of formality	Informal	Emerging formal units	Formal	Integration of formal and informal
Orientation	Tactical	Tactical	Mixed	Strategic
Analysis	Little or none	Limited quantitative	Both quantitative and qualitative	Qualitative emphasis
Link to decision making processes	Little	Weak	Strong	Direct input
Top management attention	Low	Limited	Moderate	High
Principle location of CI personnel	Library/market ing	Planning/market ing	Marketing/plann ing/CI unit	CI unit/ marketing/ planning
Key issues	<ul style="list-style-type: none"> • Developme nt of skills in informatio n acquisition 	<ul style="list-style-type: none"> • Building a business case for CI • Spy image • Analytical skill development 	<ul style="list-style-type: none"> • Demonstrati ng bottom-line input • Demand-versus Supply-driven CI • Counter intelligence • International CI • Technology CI • Role of information technology 	<ul style="list-style-type: none"> • Managing the parallel process • Intelligenc e infrastru ctu res for multination als • CI as learning • Network analysis

Source: Prescott (1995: 77)

university education to well-developed corporate business intelligence programs. However, it appears that many of the Western countries like the US still have a lot to learn.

According to many practitioners of business intelligence in Finland the situation is unfortunately not as advanced as previously described. When the boom of business intelligence in the United States came in the late 1980's the same has happened in Finland in the latter part of 1990's. Even the biggest and most advanced Finnish companies are still struggling to make their system work as was described in table 4. in the competitive intelligence phase. Then again many smaller companies are still in the phase where business intelligence is at the stage of market researches and industry analyses which are done in a very informal way. (Nevanlinna 1998, Pesonen 1998)

2.2.4 Successful business intelligence system

In order for the business intelligence system to be successful it needs to fulfil the tasks given to it and produce the value which is above it's costs. One approach to define the successfulness of the system is to look at the benefits which are derived from the system. In a survey of intelligence professionals conducted by their organisation in the end of 1980's the following benefits of an organised approach to intelligence were noted: (Gilad 1989:33)

- Identification of new business opportunities
- Sharing of ideas
- Improved ability to anticipate surprises
- Improving managers' analytical skills
- Integrating diverse ideas

One important factor affecting the usefulness of the function is the way it is being organised. According to Marchand (1997: 348-349) there is no best way to

organise the business intelligence function. In certain companies and in certain types of decision making situations performed by the chief executive the centralised approach is appropriate. In some situations and in some companies where decisions are performed by several managers sharing business units or geographical areas a more distributed approach is preferable. In table 5. different key dimensions related to centralised and decentralised business intelligence systems are being illustrated. Fuld (1991: 15) argues that intelligence systems are most efficient when they are decentralised but co-ordinated

Table 5. Competitive intelligence process: two approaches.

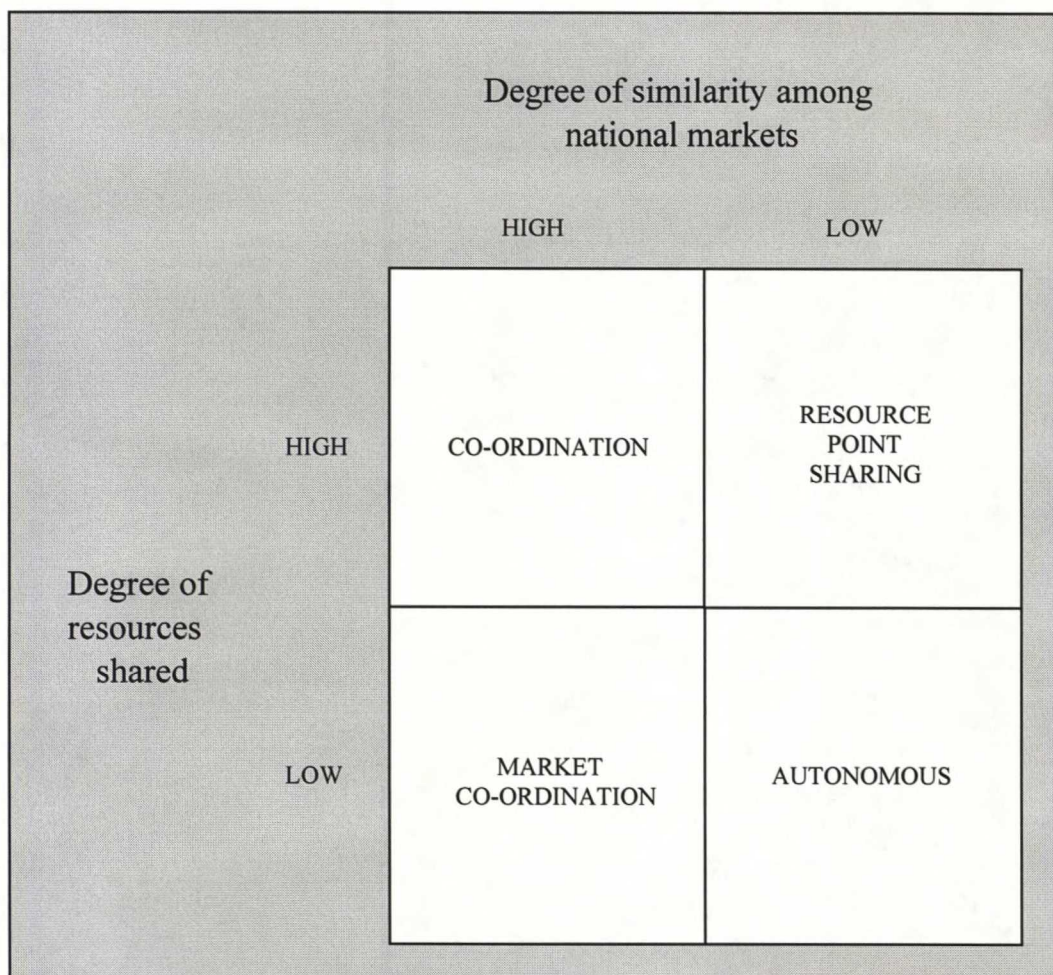
Key Dimensions	Centralised approach	Decentralised approach
Information culture	Control	Sharing
Future orientation	Intelligence for key decisions	Open to learning & Unlearning
Structure	Vertical	Lateral
Process	Highly focused	Highly interactive
Scope	Oriented to senior management	Broad management learning
Time horizon	Short - Medium Term	Medium - Long term
IT Role	Operational	Strategic
Organisational memory	Centralised; Narrow band	Open; Broad band

Source: Marchand (1997: 349)

Prescott and Gibbons (1991: 22-25) have taken another view on the subject and have defined four types of different business intelligence infrastructures: (1) co-ordinated, (2) market co-ordination, (3) resource point sharing and (4) autonomous. The driving force behind these different infrastructures is dependent on two types of cross-business relationships: The degree of similarity among national markets and the degree of shared resources among business units (See figure 9). The power generation business which is the main concentration of our study cannot clearly be positioned to any of the above categories. Resources are fairly shared, but the question of similarity of markets is not very unambiguous.

The regulations and the political situation in different markets varies substantially where as the competitors and the products are almost exactly the same all around the world. In other words we could categorise the industry as having features of co-ordinated as well as resource point sharing infrastructures.

Figure 9. Four Business Intelligence Infrastructures.



Source: Modified from Prescott & Gibbons 1991: 22-25

Perhaps the most appropriate way to perceive the dilemma is to see these approaches as different ends of a continuum and in between of the ends there is likely to exist several alternative modifications. Furthermore, there are several factors such as the organisational culture and the real customers of the business

intelligence function which have an impact on the optimal system and thus one single best approach cannot be formulated.

2.2.5 Typical problems from introducing a business intelligence system

Introducing a business intelligence system into a corporation is never an easy task and cannot be expected to be implemented rapidly. According to studies made by Fuld (1991:16) a business intelligence system takes commonly three to five years to mature. A maturation period is needed to build a network of contacts, establish adequate files or databases and build up a base of knowledge. Furthermore as processes in a business organisation generally evolve over time also business intelligence system is a constantly evolving function.

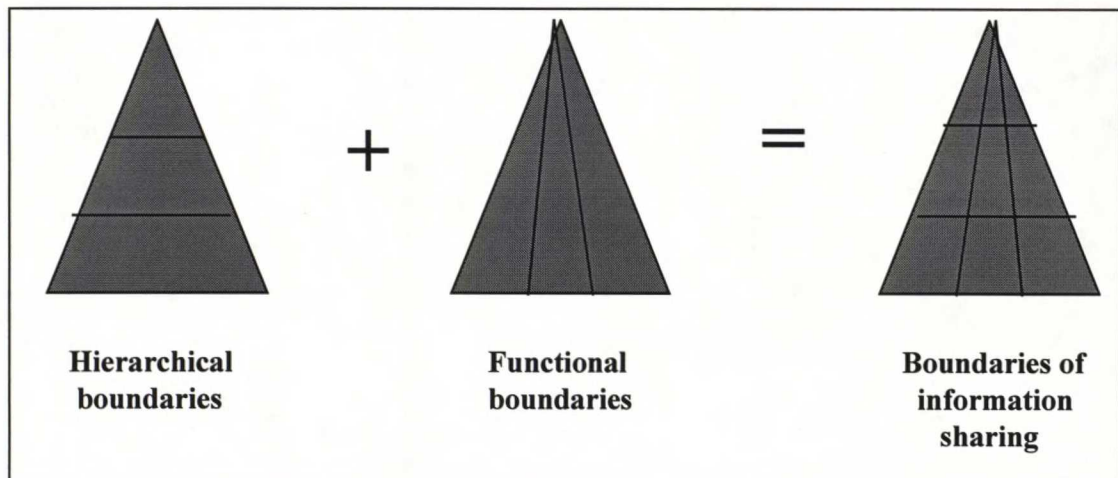
Consequently some of the business intelligence systems introduced have not been very successful. According to Fuld (1991: 12) Intelligence programs fail primarily because the senior management does not recognise three basic principles. Firstly, the intelligence effort must be based on the organisations existing information needs. Secondly, the management must allow information collectors enough time to analyse the data and finally the staff has to be trained to use the intelligence effectively. Also Jaffe (1979: 54) has studied the same phenomenon and according to his studies the major reasons for an intelligence system failure are as follows.

1. Failure to distinguish between marketing research and intelligence.
2. Failure to define the information needs.
3. Failure to place responsibility on individuals and organisations for gathering information.
4. Failure to acquire management acceptance of the system.
5. Failure within the system itself, e.g. processing, storing, and disseminating information.

6. Failure to implement an evaluation procedure in light of system objectives.

One of the major obstacles in introducing a successful business intelligence system is the fact that the individuals consider the information they are possessing as an asset for themselves and are not willing to share it with others. An effective competitive intelligence program serves as a catalyst for radical change, and is therefore likely to meet organisational resistance from executives who jealously guard the knowledge they have (Bernhardt 1994: 13). In figure 10 the boundaries of information sharing have been divided into hierarchical and functional. By hierarchical is meant the confrontation between managers and subordinates while functional boundaries are for example between marketing and production people/departments. (Pesonen 1998)

Figure 10. Boundaries of information sharing.



Source: Pesonen 1998

The same problem has been noticed also in the power generation industry which is the concentration of this study. According to Whelan and Sisson (1993: 34) one of the major problem for electric utilities is the culture that knowledge is power and therefore the information is not readily shared. Many managers and supervisors avoid communicating the "big picture" to their staff, due to insufficient knowledge or lack of communication skills. Other managers are

reluctant to communicate the strategic plan because they do not want to face employee questions on their actions or performance.

2.3 Information as an input for business intelligence

2.3.1 Value of information in decision making

Information is in modern organisations considered as a resource as any other resource like raw material or human resources. Furthermore, obtaining information clearly has a cost which according to Carlson (1975: 11) results from collection, transmission and interpretation of the data. Thus in order to be able to evaluate the effectiveness of business intelligence also a value should be associated to information. In decision theory, the value of information is the value of the change in decision behaviour caused by the information less the cost of obtaining the information. In other words, if business intelligence system is to be successful it needs to add measurable value to the bottom line performance of the firm. If the new information does not cause a different decision to be made the value of information is zero (Bernhardt 1994: 13).

However, if the value of information were based only on the model presented above, much of the information organisations and individuals prepare would be worthless. According to Davis & Olson (1985: 216 - 221-223) other bases for the value of information are motivation, model building and background building. Motivational information provides the receiver a report on how well they are doing. It can reinforce an existing understanding, motivate decisions and it also aids in learning as individuals receive feedback on the consequences of actions. The management of an enterprise operate with certain models in their minds on how the enterprise functions. Information that is received by individuals may change or reinforce these models and thus cause organisational learning and expertise building. This way it also has an effect on identifying problems and solving them. Third usage of information that cannot be identified to any specific

decision making situation is the building of background information for the individual. More experienced and qualified person can usually make the decision with less information than a less-experienced decision maker because of the information already existing in his possession. In other words much of the information that individuals accumulate is not earmarked for any particular decision making and thus its cost cannot be allocated to any decision.

Another point of view into the value of information is that the quality of information is determined by how it motivates human action and contributes to decision making. According to Andrus (1971: 40-46) information may be evaluated in terms of information utilities which are the following:

1. Form utility: Information's value increases the closer it is to what is being required by the decision maker.
2. Time utility: Information has greater value to the decision maker if it is available when needed.
3. Place utility (physical accessibility): Information has greater value if it can be accessed or delivered easily. Online systems maximise both time and place utilities.
4. Possession utility (organisational location): The possessor of information affects its value by controlling its dissemination to others.

Andrus points out that information has a cost as well as value associated with it in terms of accuracy and utilities. If the cost of acquiring information exceeds its value there are two alternatives:

1. Increase its value by increasing accuracy and/or increasing utilities
2. Reduce its cost by decreasing accuracy and/or reducing utilities.

One substitute measure for the utility of information in decision making is *information satisfaction*. In the need of information the decision maker refers to the formal information system and if the information is readily available it will increase his satisfaction to the system. Then again if an expanded search has to be

conducted the satisfaction towards the system is reduced. (Davis & Olson 1985: 214,215)

Given a choice managers usually tend to favour improvement in quality of information over an increase in quantity. Information varies in quality because of errors and bias. Bias is a result of the inability of individuals exercise discretion in information presentation and it can be resolved by the receiver of information by adjustments if the bias of the presenter is known to him. The adjusting of errors is generally more complicated because there is not a simple method of doing it. Davis & Olson (1985: 215) argue that errors are usually the result of one or more of the following.

1. Incorrect data measurement and collection methods
2. Failure to follow correct processing procedures
3. Loss or non processing of data
4. Wrong recording or correcting of data
5. Incorrect history (master) file (or use of wrong history file)
6. Mistakes in processing procedure (such as computer program error)
7. Deliberate falsification

According to Davis & Olson (1985: 216) the receiver of information has often no knowledge of either bias or error affecting the quality of information. Some measures to overcome this problem are the following.

1. Internal controls to detect errors
2. Internal and external auditing
3. Addition of "confidence limits" to data
4. User instruction in measurement and processing procedures, so users can evaluate possible errors

2.3.2 Information categorisation

An essential part of the business intelligence system is the storage of information which enables the users to go back to the information in later points of time and create an overall picture of various phenomena. For efficient storage and consequently for the dissemination of previously acquired, already stored information it needs to be categorised in some way. Naturally the division into categories depends largely on the specific information requirements of the company and the industry, but some broad guidelines can be framed. One model of categories for business intelligence systems has been defined by Keegan and it is presented in table 6.

Quite commonly two big subsystems of business intelligence system are market intelligence system and competitor intelligence system, which are many times very interrelated. Market intelligence is concentrated on gathering all the important data of the whole market like pricing, payments, financing and promotions. The customers of marketing intelligence are usually the marketing department or sales force but also the planning team because it provides data on the success and failure of own sales efforts. (McGonagle & Vella 1996: 58-59)

Another essential part of business intelligence activities is analysing the competitors in each market. According to Aaker (1995: 71) monitoring the competitors has the following advantages. First, understanding the strengths and weaknesses of competitors can suggest opportunities and threats that need a response at the specific moment and some insight for the future. Secondly it gives insight into what might be the responses of the competitors for our strategic actions. Finally competitor analysis may result in the identification of a strategic question which might be worth monitoring over time. Porter (1980: 71) argues that an analysis of each existing and potential competitor can be used as an important input to forecasting the conditions of the whole industry. As can be seen in figure 11. Aaker defines eight elements according to which the competing organisations profile and actions can be measured and which need to be assessed in analysing the competitor.

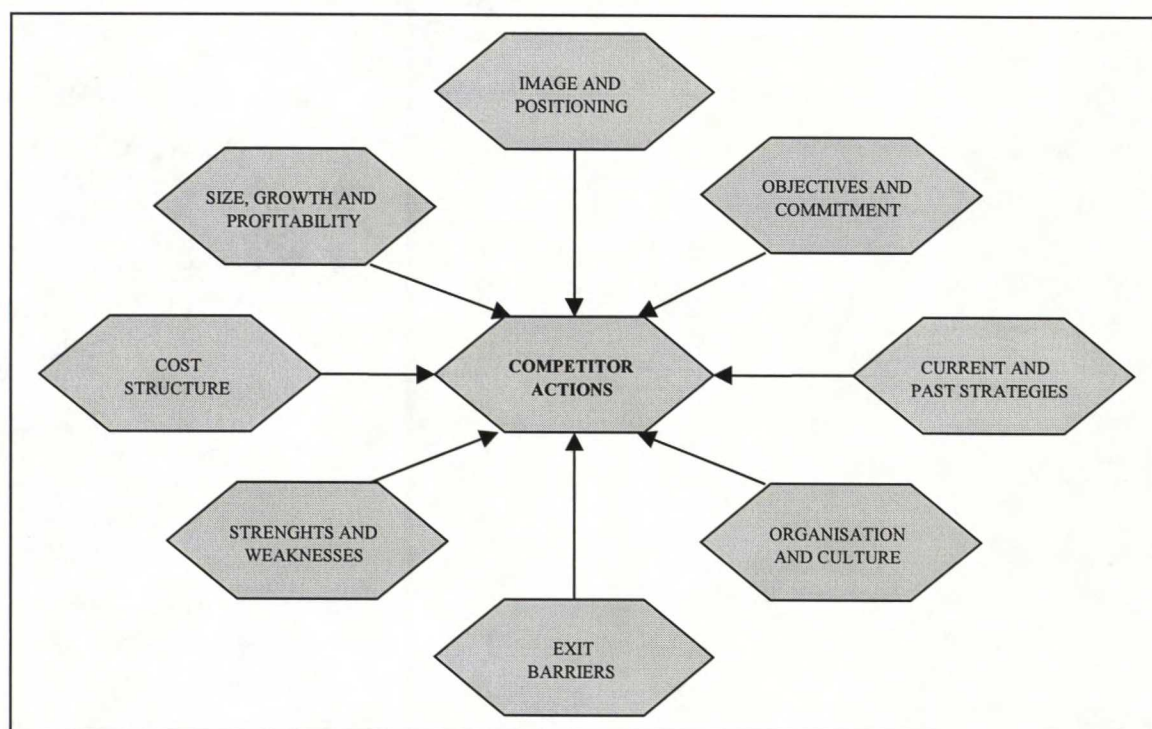
Table 6. Categories for a Global Business Intelligence system.

I. Market Information
1. Market Potential
2. Consumer/customer attitudes and behaviour
3. Channels of distribution
4. Communications media
5. Market sources
6. New products
II. Competitive Information
7. Competitive business strategy and plans
8. Competitive functional strategies, plans and programs
9. Competitive operations
III. Foreign exchange
10. Balance of payments
11. Nominal and real interest rates
12. Inflation rate compared weighed trading partner average
13. Estimate of international competitiveness
14. Attractiveness of country currency and assets to global investors
15. Government policy re: country competitiveness
16. Country monetary and fiscal policy
17. Spot and forward market activity
18. Expectations and opinions of analysts, economists & businesspeople
IV. Prescriptive information
19. Foreign taxes
20. Other foreign prescriptions and laws
21. Home country prescriptions
V. Resource information
22. Human resource
23. Money
24. Raw material
25. Acquisitions and Mergers
VI. General conditions
26. Economic factors
27. Social factors
28. Political factors
29. Scientific technological factors
30. Management and administrative practices
31. Other information

Source: Keegan 1995: 227-228

The third large part of business intelligence often mentioned is the technical intelligence. For example Herring (1993: 10-11) argues that also R&D managers need their own scientific and technical intelligence to speed up the product development, analyse technological alternatives and make cost-effective resource-allocation decisions. The technology forecasts provide the longest view of future opportunities and threats while political and economic forecasts are more short-term and volatile. However, R&D intelligence itself is of limited value and it must often be combined with other knowledge.

Figure 11. Understanding the competitor.



Source: Aaker 1995: 72

2.3.3 Sources of information

At least as important as information collection methods which were described in chapter 2.2.2.3 are the sources of information, because they define the quality and

usability of the information received. Input into the competitive intelligence system can come from a wide variety of sources, both public and private. People often mistakenly assume that most of the intelligence information comes from secret sources, but the truth is that most intelligence activities (even of the CIA and certainly of business) operate using primarily public information. The US navy has estimated that even during world war II they obtained 95 % of the data from public sources, 4 % through semi-public sources and only 1 % through secret sources. The emphasis in efficient data gathering is on organised search of publicly available information. (King & Cleland 1978: 254)

Bradley (1995: 272-274) has divided the information sources used in international market selection process for internal and external which further divide into sub groups. The internal information sources mean mainly the knowledge and experience accumulated for the employees of the firm as well as the various databases where information of the external environment is stored. The external sources vary extensively from case to case but commonly they include trade journals, magazines and other reference publications which however, play a greater role in opportunistic identification of export markets. Other important sources are special private and government or industry sponsored promotion agencies which can provide a firm with information and advice on many aspects of foreign markets as well as create more in-depth market reports and surveys.

Another kind of division of sources of information has been made by Prescott and Smith (1987: 416-417). They argue that there are two primary sources of information: learning curve sources and target sources. Learning curve sources are those with general information on the problem like industry studies and books. Target sources mean the specific problem related sources like trade association or competitor personnel. The information collection process is usually started with the learning curve sources and after gaining a general understanding of the situation the research continues with the target sources. Also other information already possessed by the company not collected specifically for the problem should be integrated to the data to give further depth to the analysis.

As can be seen from the table 7. people are the most important sources of information for internationally operating company. According to Keegan (1995: 230) the majority of the information comes from outside the organisation but the most important source of external information are the executives of the company working abroad in company subsidiaries.

Table 7. Sources of information.

Location of Sources		Types of Sources	
Inside organisation	34 %	People	67 %
Outside organisation	66 %	Documentary	27 %
		Physical phenomena	6 %

Source: Keegan 1995: 230

Other essential human sources of information are distributors, consumers, customers, suppliers and government officials as well as friends, acquaintances, colleagues, consultants and candidates for employment. As shown in the table 8. majority of the human sources of information are personal. 97 % of the sources inside the company are personal opposed to 80 % of the sources outside the organisation (Keegan 1995: 231). Also the researches made by Higgins (1985: 47) indicate that 40 to 75 percent of the information used by top managers comes from informal sources.

Table 8. Comparison of Personal and Impersonal Human Sources.

Source Relationship	Inside Sources	Outside Sources	All Human Sources
Personal Sources	97 %	80 %	86 %
Impersonal Sources	3 %	20 %	14 %

Source: Keegan 995: 232

One of the modern day information sources is the internet. It is an information source in which the amount of data is far beyond the traditional methods and more and more companies are learning to take use of it. According to Pawar and Sharda (1997:115,118) the internet is likely to be relatively more suitable for acquiring information on the general environment than on the specific, task environment. However, they also argue that since the sources of information in internet vary considerably also the pattern of internet use would also vary.

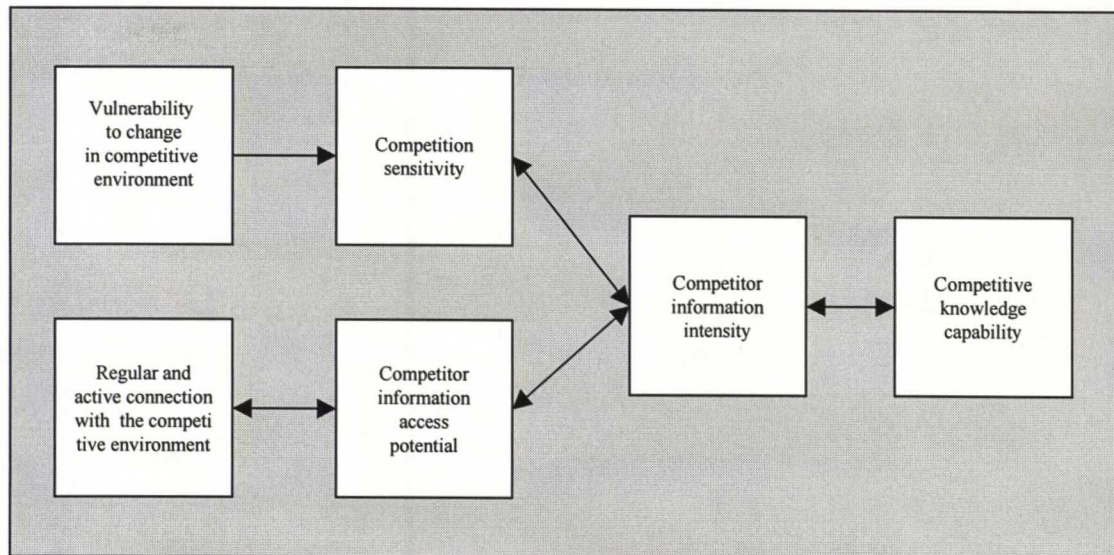
2.3.4 Boundary groups of information collection

An organisation is a highly complex social system with different people and different organisational units which all collect and use business intelligence differently. Some units and individuals have higher awareness of competitive information and they collect competitive information more than others. Likewise different groups or subgroups have dissimilar reasons and motives for collecting information and thus the information acquired can be very different. (Pirttilä 1997: 22)

The amount and quality of information collected by different groups or individuals depend on several interrelated factors which Pirttilä (1997:22-25) has divided into Competition sensitivity, Competitor information access potential, Competitor information intensity and Competitive knowledge capability. (See figure 12.)

According to Pirttilä (1997: 24) the competition sensitivity is the prerequisite for an individual to be able to engage in monitoring the competitive environment. The sensitivity in turn is dependent on the level of how vulnerable the individual or an organisational group is to competition and thus how alert he needs to be of changes in the competitive environment. Naturally in order for the individual to gain knowledge of the surrounding environment he needs to have an access to this information. These together, the Competitor information sensitivity and Competitor information access potential create competitor information intensity.

Figure 12. The interrelations of Competition sensitivity, Competitor information access potential, Competitor information intensity and Competitive knowledge capability.



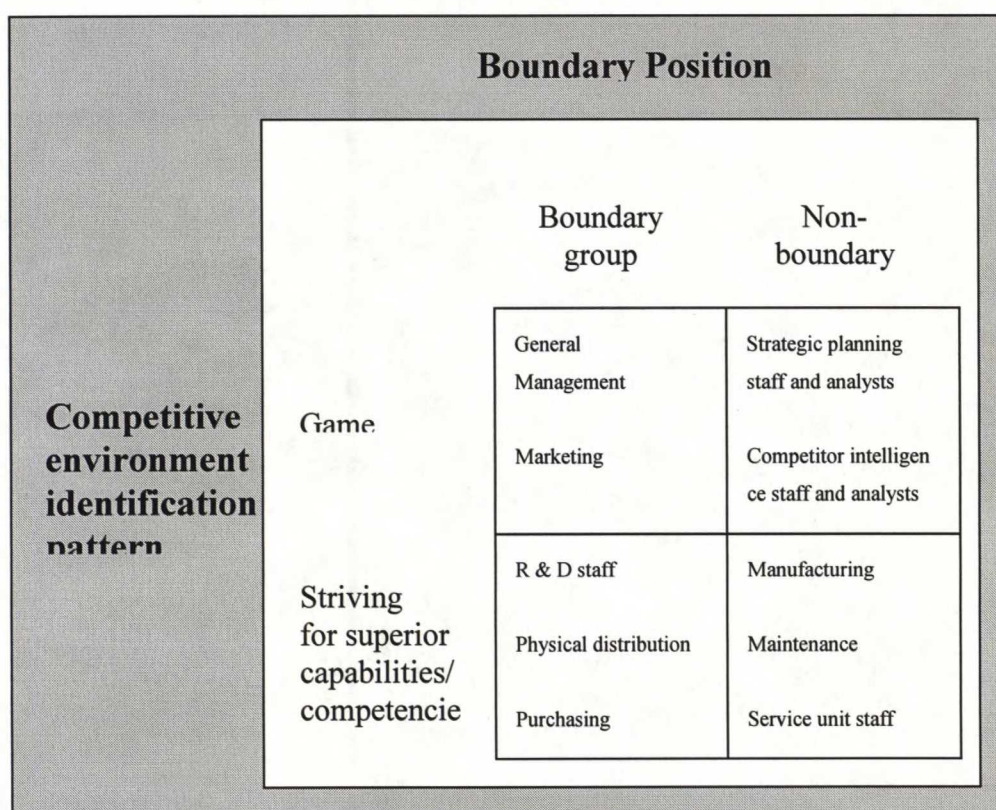
Source Pirttilä 1997: 25

Pirttilä defines competitor information intensity as the quantitative aspect of information accumulation i.e. the possibility of collecting and the interest to collect and store large amount of relevant information. Competitor information intensity then again enables the individual or group gain competitive knowledge capability which she defines as the qualitative aspect of competitor information accumulation and use. She states that in order for a high information capability to evolve the individual needs to have the competence to recognise the value and relevance of the information as well as the capability of using this information either directly or by sending it to some other part of the organisation where it is relevant.

As mentioned above, individuals in different organisational groups and subgroups have different possibilities of acquiring information of the competitive environment. Miles (1980: 316) defines individuals and units having the possibility to transact or negotiate with other organisations and consequently monitor meaningful events in the environment as having boundary roles. These groups have higher sensitivity to competition as well as better access to competitor information and have therefore higher competitor information intensity

than other groups in the organisation. The most commonly identified boundary group which is in close contact with the environmental forces is the marketing function (Katz & Kahn 1978: 87). Pirttilä (1997:34) in her studies has also defined general management, research and development staff, physical distribution and purchasing functions as belonging to these boundary groups (See figure 13.).

Figure 13. An example of different competitive environment identification patterns by various organisational groups in a corporate organisation.



Source: Pirttilä 1997: 34

Another categorisation in Pirttilä's model is how different organisational groups perceive the competitive environment. According to her definition some groups view the competitive environment as a game, which can be either hostile or co-operative where as to other units it is considered to be competition as striving towards superior capabilities or competencies. In this aspect functions like general management, marketing, strategic planning and business intelligence functions see

the competitive environment as a game while other organisational groups belong to the other category.

2.4 Theoretical model for market selection process

In chapters 2.1 to 2.3 the theories related to market selection, the role of business intelligence in market selection and the role of information as an input for business intelligence have been covered. Based on these theories a model of market selection process has been created by the author and is now presented in this chapter.

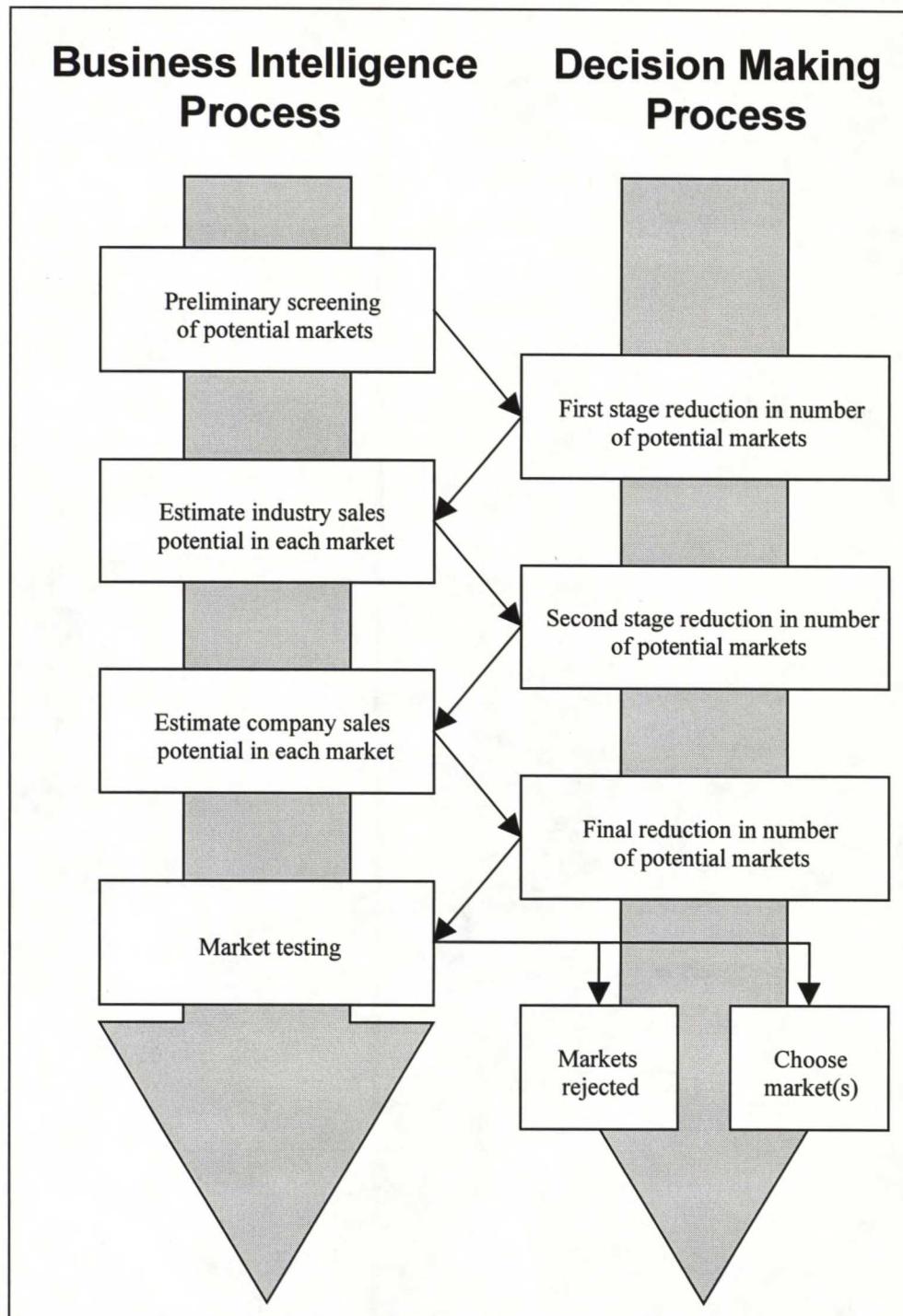
The basic idea of the model is the fact that market selection is considered as a process which includes a decision making process and a business intelligence process. In the model the business intelligence process follows the decision making process and feeds it with the information needed to make the decisions. Like most of the important strategic decisions also market selection decision is an incremental decision making process including several sequential phases. (See chapters 2.1.1 to 2.1.3). Information for the basis of the decisions is provided by the business intelligence system which is a comprehensive system covering the whole organisation creating all the necessary intelligence of the internal and external environment of the company (described in chapter 2.2). The basic idea of business intelligence is that it needs to provide as accurate information to the specific decision making situation as possible and therefore like decision making process it needs to include different phases to be able provide always the correct information.

The model in figure 14. is based on the models created by Bradley (1995:265), Gavusgil (1985:27-33), Garland & Farmer and Taylor (1990: 69) and Root (1982: 34) which were all described in chapter 2.1.3. According to the model, the business intelligence process includes preliminary screening, industry sales potential estimation, company sales potential estimation and market testing. In the

preliminary screening phase a large number of markets are being followed in a very general level by all of the employees in a boundary position (see chapter 2.3.4). The next stage in the business intelligence process is estimating the industry sales potential of the whole market. Some of the literature calls the industry sales potential estimation as market study (see chapter 2.2.2.3) which usually includes both a desk-study and a field-study. After analysing the whole markets the next phase is to analyse the probable sales potential of one's own firm in the market. The final stage in the business intelligence process is market testing on the basis of which the final suitability of the market for the company will be determined. A more comprehensive description of how business intelligence is created and thus what happens in each of the phases of the business intelligence process is given in chapter 2.2.

As was mentioned earlier the role of the business intelligence process described above is to provide basis for the decision making process of market selection. In the decision making process the number of potential countries is reduced by forgetting the less attractive markets after each phase of the business intelligence process. In other words, in the first stage reduction of potential markets the decision to find out more of the most potential markets and forget the less attractive one's is based on the information from the preliminary screening. In the second and final stage reductions of potential markets the decisions are being made according to the potential of the whole industry and the potential for one's own company in the market respectively. The final decision to choose or to reject the market(s) can be made after the market has been thoroughly tested. Based on the information from the market testing the ultimate suitability of the market for the company can be estimated.

Figure 14. The Theoretical Model for Market Selection Process



The model presented here is very general and is not related to any specific industry, which can both be considered as its weakness and its strength. The model does not give very explicit answers on what should be done in each phase of the process but on the other hand it can be applied to a market selection process

irrespective of the industry. A critique which can be justified is that especially the decision making process of the model is very simplified. This is due to the simplicity or lack of literature and research of the decision making related to market selection which can be noticed from the models of market selection presented in chapter 2.1.3.

In chapter four the market selection process and the related business intelligence process will be experimented in power generation industry and a model of market selection in the case company will be presented. The above mentioned shortcomings of the existing literature and thus also the theoretical model give both an additional justification for the study and an extra challenge for the results derived from it. The results of the study are compared with the theoretical model in chapter five and the conclusions of the empirical evidence will be drawn.

3 METHODOLOGY

3.1 Research approach

One of the several methods of conducting empirical research is case study approach which will be used in this research. Yin (1989: 23) defines a case study as an empirical enquiry that:

- investigates a contemporary phenomenon within its real-life context; when
- the boundaries between phenomenon and context are not clearly evident; and in which
- multiple sources of evidence are used.

Case study method is especially suitable for investigating real life events such as organisational and managerial processes or decisions, which makes it applicable to this study. A case study research frequently answers to question like how and why, which are more explanatory, than questions like who and how many, which

usually require a survey method (Yin 1989:14,17-18, 23). According to Eisenhardt (1989: 535) a case research can be used for the following purposes:

- Description of a phenomenon or a problem
- Testing of a theory
- Creation of new theory

In this research the case approach is used to test the theory which is created on the base of the existing literature and theories on the subject. The results of the empirical research will be described in the following chapter four and then compared with the theoretical model presented in chapter 2.4. In chapter five a conclusion of the similarities and differences between the theoretical model and the empirical research will be drawn.

The unique strength of case study method is its ability to deal with a full variety of evidence: documents, artefacts, interviews, and observations. A common misunderstanding is that case studies are commonly mistaken for being limited to qualitative study. As a matter of fact case studies can include and even rely solely to quantitative evidence. (Yin 1989: 20,24)

Yin (1989:19) argues that case study is preferred in examining contemporary events, but when the relevant behaviours cannot be manipulated. Thus, the case study relies on many of the same techniques as history, but adds two sources of evidence not included in the history method: direct observation and systematic interviewing.

3.2 Research design

According to Yin (1989: 27-29) a research design is the logic that links the data to be collected and the conclusions to be drawn to the initial research questions. In other words it is the action plan for bringing the study from the initial research questions to the conclusion phase. Another way of defining the research design is

that it is the "blueprint" of the research dealing at least with four problems: what questions to study, what data are relevant, what data to collect and how to analyse the results. (Philliber, Schwab, & Samsloss, 1980 in Yin 1989: 29).

One of the problems with research design formulation related to case study approach is that there does not exist a common understanding of potential alternatives. Case study is relatively new and sometimes undervalued method of conducting academic research and therefore there are no ready made patterns on what kind of research design is to be used in each situation. (Yin 1989:10, 27) However, this does not necessarily need to be regarded as a constraint but also as a possibility of using various, possibly creative methods of revealing the empirical evidence of the study.

According to Yin (1989: 29) five components of a research study are especially important for case study research:

- study's questions
- it's propositions, if any
- its unit(s) of analysis
- the logic linking the data to the propositions and
- the criteria for interpreting the findings

In case study research the method of generalising from the case study to theory is called "analytic generalisation". In analytic generalisation the previously developed theory is used as a template with which to compare the empirical results of the case study. The purpose of a literature review of previous research is to develop sharper and more insightful questions, not to find answers about what is known to the topic. (Yin 1989: 20,38)

According to Yin (1989: 46) case studies can be categorised into four types of designs deriving from a 2 X 2 matrix where the dimensions are single-case vs. Multiple-case designs and simple (holistic) vs. multiple (embedded) units of analysis. Thus a case study can always include one or several cases and each of

these cases can include one or several units of analysis. This study can be categorised as being single-case (embedded) design because the source of empirical data is only one single company, but the study is divided into two separate but strongly interrelated processes, decision making process related to international market selection and the business intelligence process providing the input for the decisions. These processes are studied partly separately and the results are combined thus giving answers to the research questions of the study. Furthermore, the research concerning the decision making process shall be conducted by studying three individual situations occurred inside the company which brings the research still down to smaller units of research. These three situations will use the history approach to find out how the decision making process has been conducted and hence the conclusion can be drawn on what is the average process like and what are the phases of the process that always occur.

3.2.1 Case company selection

In this study the empirical research will concentrate on energy industry and more specifically on power generation field of the energy industry. As has been mentioned before, the energy industry in Finland and in several other countries is currently going through a heavy phase of deregulation. Therefore the energy companies are internationalising and are engaged in international market selection which creates a need for knowledge over the subject. Furthermore, the business intelligence department in many energy utilities does exist but is in need for additional research to be able to develop.

Power generation industry is normally the first segment of energy industry that opens up to international competition as power sales or transmission stay longer regulated. Power generation has therefore somewhat longer experiences of market selection and is thus the natural choice for the concentration of this study. It also gives a larger amount of empirical evidence and facts which permits to draw more valid conclusions.

The decision to choose IVO Power Generation as the case of this study was largely affected by the fact that it has been very advanced in its internationalisation efforts. It has been in the forefront of the power companies expanding outside their home market and been one of the first players in many markets. Therefore the experiences in the case company are extensive compared to many of their competitors and it gives a good platform for the empirical study. It is also the only power company in Finland which has reached success in the international arena and consequently the only Finnish power company which could be the source of empirical evidence to this study.

Finally one important issue for the case company selection is the fact that the author is working in the business intelligence department of the case company and is thus in a perfect position to observe the phenomenon. This has also allowed the author access to certain confidential data which would otherwise been impossible to obtain.

3.2.2 Selecting interviewees and interview guide

Selecting interviewees for each phase of the empirical evidence collection has been made on the basis of what kind of information was required and who was able to provide it. In the pilot interview three key individuals were interviewed in order to get a better understanding of the phenomenon: the one in charge of the business intelligence function, the one in charge of the strategy department and the one in charge of developing the entry to new markets. No specific interview guide was used other than discussing all the relevant matters to the study.

In the first real interview round five individuals were interviewed to find out the processes used in entering three different markets. All of the interviewees had for some period of time been responsible for the specific market area entered. They were selected so that for each market at least two persons were interviewed which means that all the information concerning the markets was verified by another source. The selection was done also in such way that the whole process for each

market was received in first hand information. The interview guide can be found as appendix 1.

In the second interview round thirteen individuals were interviewed in order to find out the information requirements for the market selection. Five of the employees were directors who actually have the power to make the decision to select a certain market. Six of them were managers who do the practical job in entering new market like negotiations and much of the information collection. Even though they do not have the final word much of the decision making is still done in this level due to incremental decision making. The remaining two interviewees were from the business intelligence function and were the one's who do much of the information collection. Even though they did not have any power in decision making they have a very good understanding on what is the relevant information and which part of it is really essential. The interview guide is presented as appendix 2. and the complete list of interviewees in appendix 3.

3.2.3 Data collection

According to Philliber, Scwab & Sloss (1980: 23) a theoretical framework needs to be created before commencing the actual collection of the empirical evidence. This will provide a strong guidance in determining what data to collect and the strategies for analysing the data. In this study the existing literature was described in chapter three. After the theory formulation the empirical research of the study was made qualitatively in three sequential phases, out of which the first phase was a pilot interview (See figure 15.). The pilot study was the final preparation for the data collection as is suggested by Yin (1989: 81). The inquiry for the pilot case can be much broader and less focused than the ultimate data collection plan. It helps investigators to refine the data collection plan and gain a better understanding of the phenomenon. In this study the pilot interview consisted of interviewing three key individuals both individually and in a group meeting. The purpose of the pilot interview meetings was to gain an understanding of the prevailing methods and processes which are used in the decision making process

related to international market selection as well as clarifying the present use of business intelligence systems as a means of creating the needed knowledge for the base of these decisions. More specifically the purpose was to clarify the concepts, test the questions, find a basis for the information requirements, the people involved in the process and create a framework for the individual interviews.

The first real phase of the empirical study was conducted in personal interviews with five employees of the case company which have been involved in the international penetration decisions and have a knowledge of the processes used in the decisions to select the current markets served by the case company. The purpose of these interviews was to go through three geographical areas and learn what has the market selection process been like and what are the different possibilities both in terms of the business intelligence process and the decision making process. Based on these interviews an average model for these above mentioned processes was created for the use in the following interviews. The model was created related to the following aspects:

Decision making process

1. What are the phases of the process?
2. Who are the people involved in each phase?
3. What information has been the base for decisions in each phase?

Business intelligence process

1. What are the phases of the process?
2. Who are the people involved in each phase?
3. How are the different phases related to the decision making process?

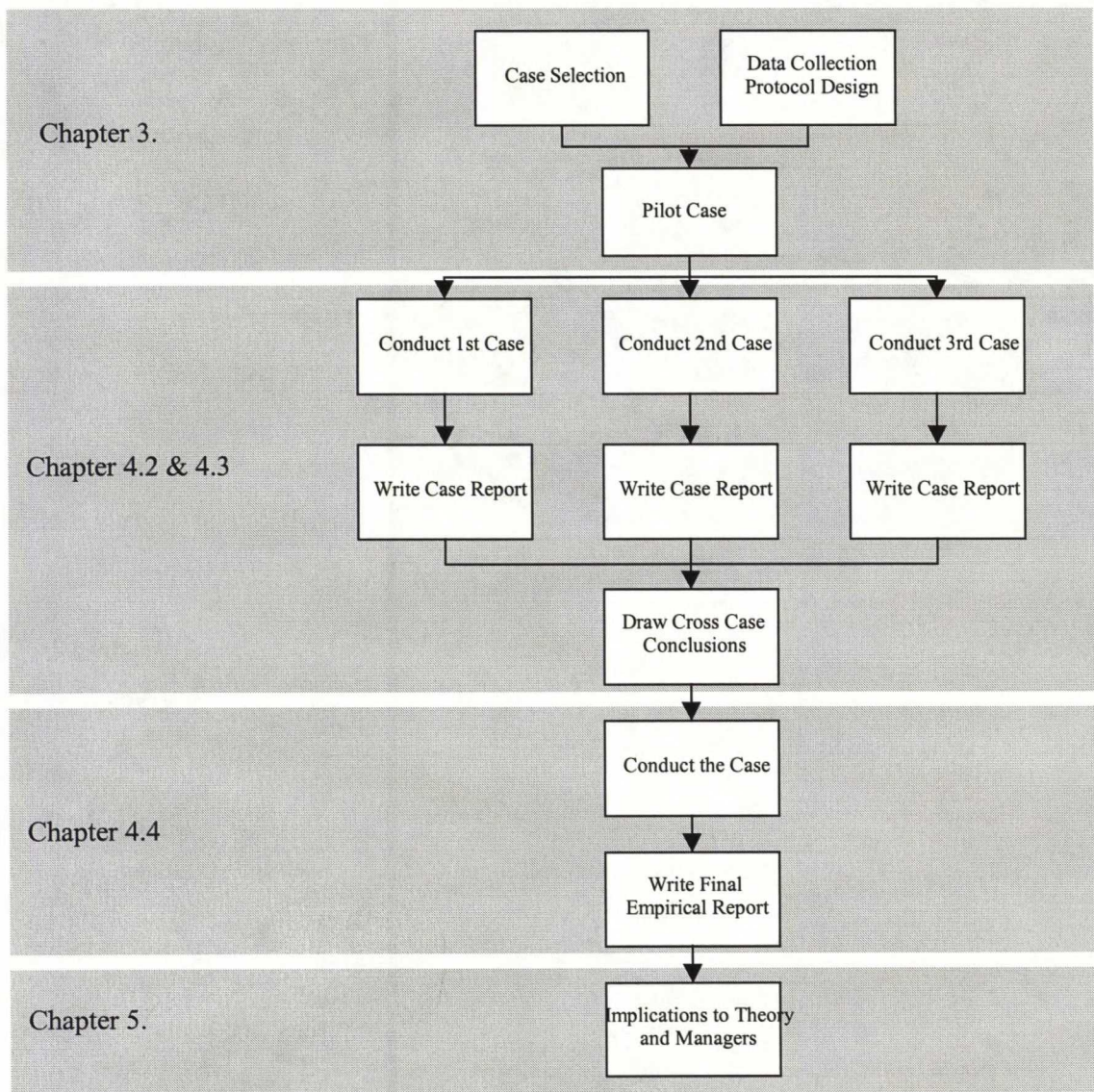
In this phase several documents, existing memos and researches conducted in the past were reviewed in order to reveal some new facts and verify the comments made by the interviewees.

In the second phase thirteen employees of the case company, who are either the ones using the information created by business intelligence department or are the

ones working in this department to create the information were interviewed. The purpose of this second round of interviews was to clarify the information requirements of the users of business intelligence. The interviews concentrated on analysing three different aspects of the information usage and creation:

1. Information requirements
2. Analysis requirements
3. Requirements for dissemination and storage of information

Figure 15. The Data Collection design



In all of the phases each interview lasted between one and two hours and was recorded in order to be able to better concentrate to the findings from the conversation. All of the interviews were conducted in Finnish which was the mother tongue of all the interviewees. The translation has been provided by the author.

3.3 Analysis of the data

After collecting the data the next task is analysing it in order to find the answers to the research questions. Analysing the data brings the data into a level where it can be compared with the theoretical framework created. The approach taken by Stenberg (1992: 66-82) suggests that qualitative data analysis takes the following steps: data reduction, data display and conclusion drawing or verification.

In this study the data collection has been conducted in two sequential phases which both included a number of interviews and a set of some existing documents and archives. In both interview phases the data reduction started immediately after the transcription of the tape-recorded interviews. In the first phase a process figure similar to the one in figure 14 was drawn from each of the three situations and returned to the interviewee for corrections. After finishing all the three individual process descriptions a comparison between them was made and the common phases of the processes were identified. Finally a market selection process figure was drawn which combined all the three cases and included all the common, important phases of both the business intelligence process and the decision making process from the three cases. Each of the phases were also described in more detail according to what the interviewees had told.

In the second phase the process picture created in the first round was used as a basis for the interview since the purpose was to determine what were the information requirement, analysis requirements and dissemination and storage requirements of the information in each of the phases of the business intelligence

process. After each of the interview the tape was transcribed and the amount of data was again reduced by omitting the statements which did not answer the questions asked. On the course of the interview round the results from the earlier interviews were used to further specify and modify the questions asked from the following interviewees. After finalising and transcribing all of the interviews a comparison between the statements was conducted and the conclusions were drawn on what were the characteristics of the critical information needed.

3.4 Validity and reliability of data

Because research design is supposed to represent a logical set of statements, one can always judge the quality of the design according to certain logical tests. There are four test which are commonly associated with case study research: (Yin 1989: 40-45)

- Construct validity
- Internal validity
- External validity
- Reliability

The first test, construct validity, means that you need to specify the changes that you are about to study in order to reach the study objectives. Secondly you need to demonstrate that the measures which are selected actually reflect the changes selected (Yin 1989: 41-42). In this study the question of construct validity has been achieved through building a preliminary framework on the basis of literature review and using multiple sources of evidence. In addition to interviews a set of existing documents (e.g. researches, reports and memos) were used as secondary data for further evidence and insights. Furthermore In many cases the written report was sent back to the interviewee for verification of the comments and therefore a problem of misunderstanding was not possible.

The second test, internal validity, means that if the study contains causalities between factors it has to be demonstrated and proved by the author. This is a concern only for causal and explanatory studies, and therefore does not apply to this study. (Yin 1989: 42-43)

The third test deals with the problem whether the study's findings are generalizable beyond the immediate case study. In another words are the results of the study applicable to another situation? In analytical generalisation which is the method used with case studies the aim of the investigator is trying to generalise a particular set of results to some broader theory (Yin 1989: 44-45). In this study the purpose was to test the theoretical model in one real life situation and see whether the model applies, not to find frequencies applicable to a large universe. In the power generation industry the case company is a very typical, large energy utility which increases the result's generalisability to other similar companies. Also studying several situations inside the company instead of one and examining thoroughly previous literature the applicability of the results has been improved.

Finally the objective of the reliability test is to ensure that if the same study would be conducted again it would arrive at the same findings and conclusions. In other words the goal of reliability is to minimise the errors and biases of a study (Yin 1989: 45). Some methods for increasing the reliability have been the recording of the interviews in order to get the message right and having a pilot case to clarify the concepts and the problem. In this study the sources of evidence from which the empirical evidence was derived were very versatile as was described above and this has been an important factor increasing the reliability of the results.

4 MARKET SELECTION IN THE CASE COMPANY

4.1 Presentation of the case company: IVO Power Generation

IVO Group is an international company which has expertise in every aspect of the energy chain. IVO is the second largest energy company in the Nordic countries which it considers as its domestic market, and among the 15 largest in Europe. The group's turnover in 1997 was FIM 13,8 billion showing a growth of almost 100 % since 1993 making it the eleventh largest company in Finland (Talouselämä 1998/ 20: 52). IVO employs 8900 employees of which two thirds in Finland. (IVO annual report 1997)

The Group has been divided into four business sectors which are Energy, Operation and Maintenance, Engineering and Energy Measurement. Through these business sectors IVO manages all the various aspects of the energy chain. IVO's expertise covers power generation; supply and distribution of power and heat; operation & maintenance; fuel supplies; energy measurement; the design and construction of various types of power plants and transmission systems; capital investments; and construction management. In addition, IVO is a world leader in the construction and operation & maintenance of combined heat and power plants. (IVO annual report 1997)

The biggest division of the group's mother company, Imatran Voima Ltd, is called IVO Power Generation which generates energy worth FIM 10,9 billion (1997), has a generation capacity of 8600 MW of electricity and 2600 MW of heat in the Nordic countries. Besides that IVO Power Generation owns shares in power plant companies in UK, Hungary, Malaysia, Thailand and Ireland. Companies abroad are operating or constructing nearly 2600 MW of electricity generation capacity and almost 2900 MW of heat generation capacity. One of the strengths of the company is considered to be the vast knowledge of different power projects since it uses wide variety of different fuels in its plants like hydro and nuclear power, coal, natural gas, bio fuels and also oil. (IVO annual report 1997)

As all around the world have the utility industries also in Finland been regulated government owned industries with no competition and no possibilities of internationalisation for decades. In Finland the deregularisation of power generation industry started in the beginning of the 1990's and that is when IVO Power Generation also started it's internationalisation. The first country entered in the field of power generation was United Kingdom in the beginning of the 1990's. After that investments have been made in Thailand 1994, Malaysia 1994, Hungary 1997 and Ireland in 1998.

4.2 Historical cases of market selection

In chapters 4.2.1 to 4.2.3 three of the historical cases of the market selection process used in entering new markets will be described in detail: namely United Kingdom, Poland and Thailand. The selection of these three countries has been made because they are very different in nature according to several aspects. Firstly they are geographically and socioeconomically very different markets. One is a Western European, highly developed, industrialised nation; one is an Eastern European emerging market; and one is a south-east Asian country in development. Secondly the deregulation of the energy industry has occurred in different times. The United Kingdom was one of the first countries in the world to announce the deregulation plans in the end of 1980's. In Thailand the deregulation started in the middle of 1990's and Poland announced the plan to open up for competition in the beginning of the 1990's but has just made the first decisions recently. Thirdly also IVO has entered these three markets in different times and with a different approach.

The decision to choose three very different cases as source of data in the first interview round was made intentionally. For the cross-case conclusion in chapter 4.3 it is an advantage that the cases are different so that the common phases of

different kind of processes can be identified and a more comprehensive picture of the phenomenon can be created.

4.2.1 United Kingdom

The United Kingdom was the first country IVO ever entered outside the home market in the field of power generation. The first interest towards UK aroused when the government of the country in 1986 announced plans to liberalise and deregulate the energy industry. After the announcement UK was being followed to some degree through newspapers and other media. In 1988 a decision was made in the headquarters of IVO to conduct a formal country study which was done partly in the field. Since the study gave positive indication of the future potential of the country a person in charge of the market was appointed and sent overseas to do further research. The next step was to formulate a market penetration strategy which was done in co-operation with a local consulting company and approved by the board in Finland. An office was established in 1990 and some local employees were hired. Simultaneously a large amount of possible investment opportunities were being screened and evaluated to find the most potential alternatives. First investment decisions were made by IVO board shortly after the establishment of the office in the beginning of the 1990's and after that the presence and commitment to the market has been increased continuously. However, a continuous evaluation of the market and the future potential is being carried out constantly.

4.2.2 Poland

After the penetration to UK was initialised an interest inside the case company aroused for screening several other destinations as well. Even though this follow up was very informal some countries were followed through the public media. In 1991 Poland showed signs of starting the deregulation process and IVO was contacted by a private developer from Poland. A decision was made to start

developing an investment project with the locally established developer and a project team was appointed for the case. Simultaneously several country and industry studies were conducted and a formal country report was bought outside in 1992. The initial project did not succeed due to political situation in the country and the interest for the market died down for some years. During the following few years not much success was reached in Poland even though some smaller investment opportunities were screened. In 1996 a decision was being made to appoint a formal country manager for Poland and the intensity to follow the market was gradually raised. Again several market analyses were being made and investment opportunities were identified. In 1998 the country was finally approved as a focus country and was taken into the strategy of IVO.

4.2.3 Thailand

After the first penetrations to international markets several regions were followed informally by the management of IVO. In 1993 a joint venture company including IVO and some other Scandinavian energy utilities identified a possible investment opportunity in Thailand. A decision was made to join the project and take part in the investment. However, soon after the start of the project a decision was made to separate from the co-operation with the consortium and continue the internationalisation alone. A formal country study of all the countries in the south-east Asian region was conducted. This was done first as a desk-study using secondary sources of data and was followed by a visit to the country to find out more specifically the potential of the markets. In the next phase a decision was made to concentrate on few countries which had most prospects, Thailand being one of them. After the decision a further field research of the market was conducted and many of the local players in the field were met. In 1995 a country manager of Thailand was appointed by the division board and a local office was established. The newly appointed employees did continuous evaluation of possible investment opportunities and over the years several investment to local power plants have been made. Still the country is under continuous evaluation by the headquarters as well as the local office on what are the future opportunities.

4.3 Development of process framework

Naturally each case to penetrate international markets has its own features and is an individual situation but all of them have similar features and same phases seem to follow each others. In this chapter the purpose is on the basis of interviews and the resulted descriptions of the history in the three presented cases to formulate a common pattern of what are the phases of the international market selection process in the case company including both the decision making process and the business intelligence process.

It seems that all of the cases presented above have the same feature of starting by an overall screening in which the managers and other representatives of the company being in a boundary position (see chapter 2.3.4) follow the external environment through public media. The screening of market was not concentrated to any particular country but several alternatives and the general atmosphere in the whole industry globally was included. This phase is commonly very informal and does not include any systematic approach to what news are being followed or what kind of information is being gathered.

In order for the process to continue there was always needed some kind of input either from outside or inside the company. This came commonly either in the form of radical changes in the external environment or an initial contact with an organisation external to the case company. After the initial stimulus, a decision is being made to conduct a more formal market research of the markets which are seen to have big enough a potential. The decision is made based on the information from the preliminary screening phase and is made by the division management.

The next phase is a formal market study (in the case company called "country study") which majority of the literature also considers as one of the first steps in starting to evaluate the attractiveness of a country. (see chapter 2.2.2.3). Most of the interviewees considered an essential feature of the market study that in

addition to the general information accessible from headquarters it includes also a substantial amount of devoted field research. Very common comments were as follows:

What needs to be done is to first make a proper, formal, desk-study market analysis. Then somebody from headquarters needs to visit there enough to get a good picture of the market and after that we can decide whether to go or not. It doesn't work that some people just devote one fifth of their time to the job and that's it.

Perceiving the attractiveness of the country comes from discussions with people and from the attitudes which stem from the general atmosphere in the country. Not from formal studies. However, during the annual strategy rounds I need to make formal studies and present them to directors.

After the formal market research a decision has to be made about the future of the process. The decision is to be considered a pre-evaluation in which the division management compares different markets in terms of their total attractiveness based on the information derived from the market study. The conclusion that needs to be reached is which markets are worth investigating further if any.

If the country had enough potential the investigations were usually continued in the field. As what happened in the United Kingdom and Thailand a representative of the headquarters went to stay in the country for longer periods of time to visit the potential customers and representatives of the government in order to gather as good a picture of the situation in the country as possible. In this phase also the potential investment opportunities are naturally identified but no large project team is yet appointed.

Gradually when the attractiveness of the country is recognised and the potential of successful investments is identified a decision needs to be made to allocate further resources to the market. Usually in this situation there is already a possible project which is coming on sale or a bidding process for a new power plant is being announced. The situation calls for a formulation of a penetration strategy to the country and fitting this into the master strategy of the whole group. Therefore, even though the monetary commitment in to the market is not yet substantial the

strategic importance of the decision is crucial. In addition to formulating an entry strategy the decision includes appointing a project team developing the project at hand. A project team includes already a whole lot of personnel from the technical, managerial, legal and financial side of the company which ties considerable amount of the human resources. The decision needs to be formulated in the headquarters on the level of division management and with close discussions with other divisions management in order to have a full picture of the effects to the whole group.

The next phase of the business intelligence process called "project development" is usually very much tied with the specific project at hand but the numerous visits to the site and the continuous gathering of information do raise the level of intelligence of the whole market inside the company. Appointing of a project team is already aiming for an investment if it does get successful and beats the competition. However, sometimes the process can be very time consuming and the actual investment might come much later. Sometimes what happens is that a proposition to take part in a project from outside the company is the first input for the process and this considerably accelerates the whole market selection process. While sometimes the process until here can take years, in this case all the phases described above need to be conducted very rapidly before becoming more seriously committed in the market.

In some point of time there comes a situation when an office in the country needs to be set up. Many times this is the latest moment a country manager responsible for the market can be appointed but sometimes the appointment has been done already earlier in the course of the process. Very commonly the set up of an office comes after a project team has been appointed but before the first investment is being made. As one director put it:

We wish and many times it is required by the local law that before we do any investment we need to have an office in the country. In many companies the customers are not even allowed to call overseas and that is why we need to be present.

However, several interviewees expressed that it is essential to first get a concrete project in development through which a good picture of the market can be formulated before any decision to set up an office is being made. Many of them also argued that it is of no use to set up an office if the company is not very committed to the project and determined to be the winner. Some markets were, however, considered so attractive that the office can be set up even without a real project in hand. In the case company the setting up of an office was considered already a substantial commitment and the reason for this could be that it was not done before the decision to commit to the market was made. This is how the situation was commented by some of the interviewees:

In IVO the setting up of an office in a country is generally considered as a long term commitment even though the real commitment actualises when we have invested the first FIM 100 million in the country.

I consider that the first real commitment was doing the penetration strategy. The next bigger commitment was the establishment of the local company and the set up of the office and the next big phase was the first investment.

The next phase is naturally the first real investment to the country which actualises if the project team is successful in their project development and it can close a deal with the other party. This decision is always made by the group board even though until here almost all of the decisions have been made by the division management. As one of the interviewees put it:

The group board was not so much involved in the decision making situations. It was only the large investment decisions that went to the board. Most of the decisions were made by the division board either formally or sometimes just by the president of the division. Many times these decisions were, however announced to the group board members and the group board controlled the situation by setting annual limits for costs and risks. The one's responsible for the area could use some certain amount of money before the project needed to be brought to the awareness of the division management.

After the investment and the establishment of a commitment to the market it does not mean that the evaluation of the market would finish. In the case company

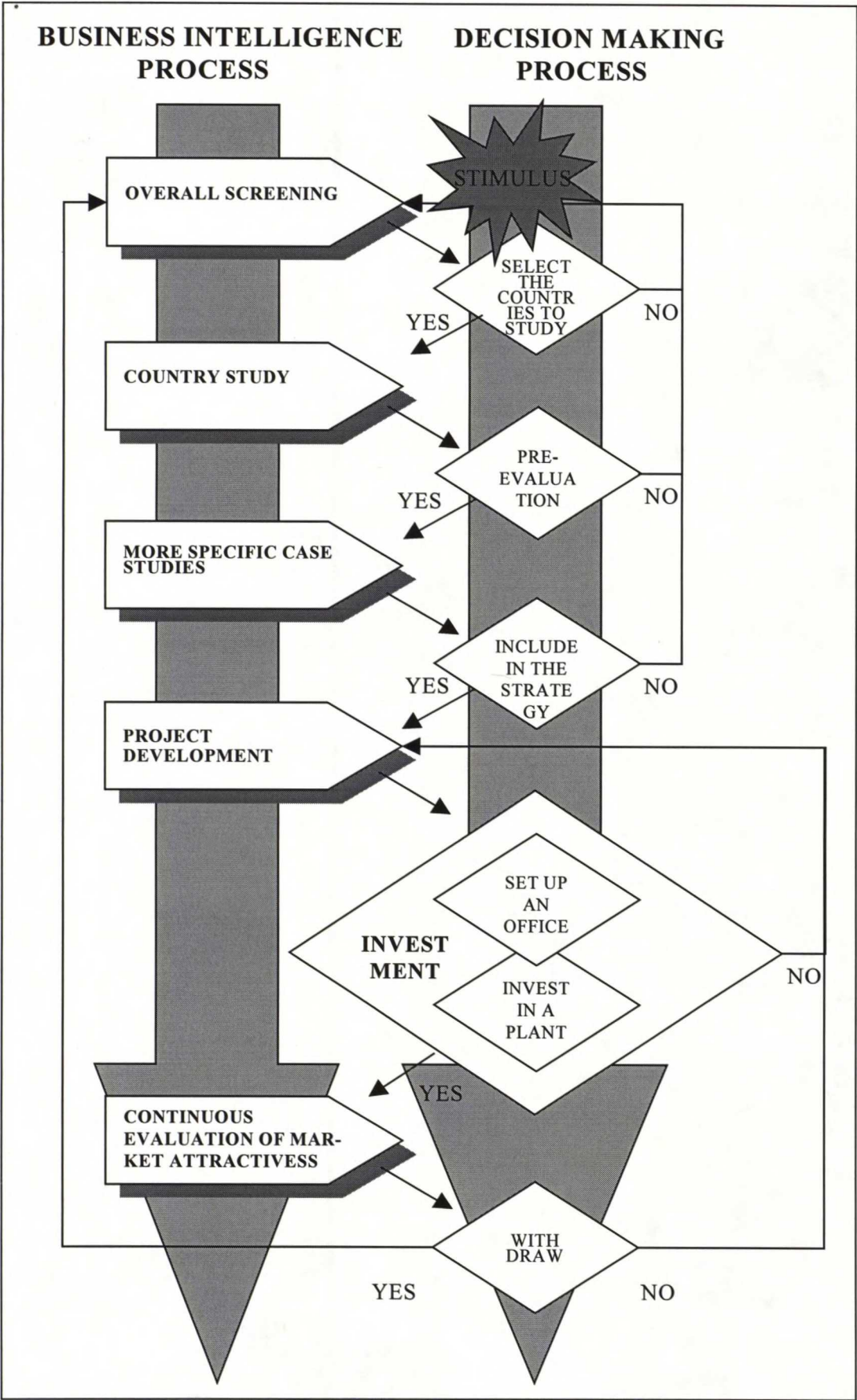
there is always a chance of withdrawal from the market and naturally the market needs to be evaluated all the time in terms of correcting the strategy according to the external changes. Some interviewees described the follow-up function in the following way:

We continued the evaluation of the situation in the country after the set up of the office and it was mainly done by the country managers and the regional manager. We wrote a report every month to the headquarters of the market situation in the country as well as what is going on in the projects and what are the competitors doing.

I, as a country manager gave information and reports every month on what is happening in the market. Then there was one person in the head quarters who made all the time different analysis, but he was doing it only part-time and along with other jobs.

On the basis of the historical cases on how does the process in different situations proceeded and the interviews with managers who have been responsible for making the decisions of market selection the following process framework was formulated by the author. (figure 16.)

Figure 16. Market selection process in the case company



4.4 Phases of business intelligence process

In chapter 4.3 a model was presented how the market selection takes place in the case company and what are its specific phases. In this chapter the business intelligence process providing the basis for the decision making process in market selection will be presented in more detail. The emphasis of the chapter is to describe what happens in each of the phases, what kind of information is required and what are the questions to be answered with the information in each of the phase.

One important question of various phases is what type of information is needed. For this study the information types have been categorised to market information, competitor information and project information, which were clearly seen as the three major categories in the case company. In table 9. a summary of the

Table 9. Business Intelligence process phases vs. Information needs.

	MARKET INFORMATION	COMPETITOR INFORMATION	PROJECT INFORMATION
OVERALL SCREENING	HIGH	LOW	LOW
COUNTRY STUDY	HIGH	LOW	LOW
SPECIFIC CASE STUDIES	AVERAGE	AVERAGE	HIGH
PROJECT DEVELOPMENT	LOW	HIGH	HIGH
CONTINUOUS EVALUATION	AVERAGE	AVERAGE	AVERAGE

importance of each of the information categories is presented for each phase of the business intelligence process. The question of information type will be dealt with in more detail in the following chapters 4.4.1 to 4.4.5.

4.4.1 Overall screening

As was presented in the model for market selection in the case company (figure 16.) the first phase of the business intelligence process of market selection is overall screening. In the overall screening phase several countries are being followed simultaneously and the methods are very informal. The screening is not a responsibility of anyone particular but most of the people in boundary positions are exposed to information of outside opportunities. Naturally the staff of business intelligence function takes a more formal approach to the screening than other employees.

Very commonly people saw two alternative methods of screening new potential markets which was implicitly stated by one of the interviewees as follows:

I think that for the overall screening there are two competing methods. The American way which first looks at the investment possibilities and only later starts wondering about the market which was entered. The other one is the Japanese way of first considering the possibilities of the whole market and after that analysing in more detail the possible projects.

These two methods can be associated in table 9. to the information concerning the markets and projects respectively. Even though the case company has in the past used both of the methods in its internationalising process the "right" method was considered to be the overall market approach. According to almost all of the interviewees the most important types of information in this phase were the macro economic questions and the level of deregulation in the energy industry. This was clearly illustrated through following comments which were very common amongst the interviewees.

In the overall screening phase we need to have an idea of all the various aspects of the market like the market size, the level of deregulation, the political stability and so forth before we get interested in examining it further.

In the overall screening the emphasis is definitely on overall market information like the energy industry of the country and what are the recent changes. Of course important things are also the players in the field to some degree and the legal environment like the level of deregulation. The information of projects in this phase is still on a very light concentration.

Another observation was that most of the interviewees implicitly announced that the overall screening is concentrated to certain geographical areas. It does not include the whole world but merely certain regions which became clearly evident from the following comments:

In many cases there is a simple factor in favour of some countries; electricity is dependent on the transmission grid. Therefore it cannot be transported over a long distance which means that many times we prefer neighbouring countries to where we already operate.

We cannot get interested of all the markets in the world. If people say that flight time does not matter they are lying. From South-America we cannot get home for the evening.

Some of the main factors affecting the choice of the areas to be followed were the geographical distance from the headquarters and the distance from markets previously entered. Some of the interviewees also mentioned factors like language barriers or the cultural differences but they were not seen really a crucial factor. The most important information was clearly the overall market information of the nation's economic situation and the changes in the legislation concerning the energy industry. The screening tried to answer the question of where could the company have a possibility of finding new business opportunities. Information regarding competitors was seen rather unimportant as they were of interest only in a sense that if someone else has entered a market there has to be potential. Furthermore, the information of potential investment projects was not actively sought for but sometimes learning of a new project was the first stimulus to bring a new market to the attention of the management

4.4.2 Country study

The next phase in the business intelligence process after overall screening is a country study (in the literature many times called a market study) which is the first formal research made of the market in question. The country study is made individually of each market but sometimes several markets can be in this phase simultaneously. The information requirements of country study phase are still quite similar than in the previous phase but everything is done in a more formal way. The main difference is that the emphasis is more in the energy industry than the macroeconomic factors. Some of the general ideas were presented as follows.

In the country study phase all the information from the overall screening should be taken deeper, wrapped together and then analysed. If we have followed some countries for several years we already have quite a lot of material in the organisation, but it should all be brought together and the missing parts gathered.

In the country study phase the concentration is on the same aspects as before it but the study goes more in depth and is much more formal. It includes studying carefully the electricity laws, the investment regulations, the competitive situation, the future potential for the whole company, etc.

The important problem that the country study tries to shed the light on could be categorised into three major questions which came up in almost all the interviews. The questions were:

1. How potential is the country in long run for IVO Power Generation?
2. How potential is the country for the whole IVO Group?
3. How risky is the market as an investment target?

The purpose of the market study was very much associated with the opportunity which is provided by new market as was also the case in the overall screening phase. This was very clearly said aloud through the following comments.

From the results of the country study we should be able to find out whether we have a competitive edge in the market or not.

The result of the study should be the knowledge of what are the market segments in that country where we could have possibilities.

As was already mentioned, the emphasis in country study phase is still very much on what has been defined above (table 9) as market information. The competitors in the market needed to be identified and their actions described but no in depth analysis was expected for. However, some interviewees stated that an in depth profile of them should exist in the organisation already from previous encounters. Also the information of various projects in the market is not needed in much detail before later during the process.

Conducting the country study or at least a major proportion of it was clearly the responsibility of the business intelligence personnel who mastered the methods of collecting the information and had a routine of such tasks. However, a commonly shared idea was also that much of the data was wanted from outside information service providers already analysed to some degree which would reduce the work load of the business intelligence function and relieve some human resources for more analytical and productive tasks.

4.4.3 Specific case studies

The next phase after market study is what in this study has been named to "specific case studies". They are considered to be various researches made on different aspects of the market to gain a better understanding on whether the market should be entered or not. A part of them are made as desk-study type and much of them are done in the field. This phase can also be considered to be quite formal but it depends very much on the market in question.

The types of information required in this phase are very much dependent on the findings of the market study and the approach which is seen appropriate for the specific situation. The basic idea is that in this phase everything related to the market should be found out which affects the decision whether the company

would like to enter there or not. Some of the ideas of what kind of studies this phase should include are the following:

After market study phase we need to make various models of how the market actually works or different scenarios of what could happen in the future. Some critical studies in this phase are also the environmental model of the market and different financial parameters on how we could work there as a foreign company.

In the specific case study phase we have to start analysing deeper also the other branches of industry than energy like chemical or pulp and paper that are very energy intensive and very potential customers of us.

In this point of time it is very important to meet the government institutions and make yourself known to everybody and at the same time monitor the reactions that they have.

More information is also requested of the competitors in the market and especially the local players which are not known to the company already in advance. The competition was not seen a critical factor in entering a market unless one competitor had a dominating position. Comments on competitor information were not very unambiguous but some interviewees knew precisely what they needed as is described by the following comment.

In this phase we need to make a profile of all the players in the field. It should include their size, the organisational structure, their management practices and methods of doing business, their products, their pricing policy and their cost structure, what is their strategy and what are their latest actions.

Perhaps the most important type of information in this phase is still the project information which until here has been left to somewhat modest attention. The important studies of the projects are feasibility and pre feasibility studies or studies of the suitability and risks of the potential project for the case company. In this phase some of the information is based on the available public information and some related to the discussions with people from the government or the project owner.

Until here the information gathering has to a large degree been taken care of by business intelligence function but in the specific case study phase it is already the future project people, the financial staff and other sectors in the company who do the evaluation and information gathering.

4.4.4 Investment potential evaluation

After the potential of the market and the various possible projects have been evaluated it is time to decide whether the market is suitable for entering and an investment project worth developing is found. If the opportunities are large enough and a potential enough a project is found it is time to designate a team of experts in leading the process to the next phase. The major question in the investment phase is naturally whether the investment should be made or not and with what price. Therefore the major proportion of the information in this phase is naturally directed to giving answers to this question.

Hence, in order to be able to define the critical information in this phase of the process one needs to understand how and on what grounds are the investment decisions made. Sometimes one can distinguish two sometimes competing criteria for investment decision making which would be the estimated return on investment and the strategic fit to the company's master strategy. Of course these two criteria do not need to be in controversy with each others but sometimes the investment, especially in the case of the first investment in a market, could be seen as such an important one that the monetary return could be compromised. From that point on it would serve as a reference point to further contracts in the market.

In the case company the dilemma of reference project approach versus the return on investments approach was recognised by almost all of the interviewees and the opinions were somewhat fluctuating. Some of the interviewees were rather strict in fulfilling the profit requirements but all of them still acknowledged the importance of the first project as a reference. The most common approach was

that the investment needs in the long run become in line with the limits set for the return on investment but many things can be compromised in the case of the first investment which is clearly shown by the following comments.

In the end many of the projects are not done solely on the financial ground but depending of the fact how deeply we want to enter the market. Of course certain criteria is important to fulfil but then we are ready to make somewhat strategic decisions.

The main questions in deciding whether to do an investment or not are the return on investment and the risks associated with it. Of course the first investment in a country is a reference investment and could be done with less ambitious profit expectations.

Many times the decision to invest in a plant is a decision to get present into the country, not only a question related to the investment project at hand.

Some of the interviewees took another point of view to the investment which was evaluating the competitiveness of the project related to the other competing projects in the market, not so much the expected profit. This was justified by saying that the financial models to calculate the expected profit over the next twenty years are so sensitive to diverse changes in the environment that they cannot be trusted anyhow.

In this phase the most important group of information was naturally considered to be the one concerning the project itself. In order to gain the knowledge to back the decisions a very detailed information of the customers, suppliers and of course the plant itself was considered essential. Another set of important research was considered to be how the plant is related to it's environment and how would this change in future or if something changed in the market situation. Furthermore, information category which grew in importance substantially from the previous phases was the one concerning the competitors and especially the one's competing of the same project. The information required was very detailed but at the same time considered to be extremely difficult to obtain as illustrated by the following comments.

The interest for competitor information actually arouses only when you have a concrete project at hand in the market. At that point the competitors you are facing are your competitors personally. And it is not enough that you find out the exact players in the project but also others in the market have to be analysed because on the course of the process some others might come along.

In this phase you should know your competitors so well that you know exactly what they are going to offer and what are their next moves, but this is a thing which is extremely difficult to find out and I don't think anybody has solved it yet.

The importance of the information concerning the whole market was not considered to be as crucial in this phase as before partly because it had been found out already in the previous phases and partly because the amount of information of the project was so large that additional data could not have been processed too effectively.

In the project development phase the responsibility of information gathering and creating intelligence inside the organisation is clearly on the designated project team. The composition of the project team varies case by case depending on the size and type of the project in hand, but usually people from the technical, financial, legal and managerial side are included. They are all responsible for gathering information from their own specific field and integrating the results to the other functions of the team. The full time business intelligence people are no longer active in this phase other than providing some requested data for the project team or doing some specific researches.

4.4.5 Continuous evaluation of market attractiveness

If the company succeeded in the previous phase to reach an agreement and finalise the investment it was usually the final commitment to the market and brought along the setting up of an office if it was not done already earlier. After the establishment of the local presence the responsibility of the market was gradually transferred more and more to the local organisation and this would naturally have

an effect also to the business intelligence efforts. Most of the interviewees considered the responsibility of the country manager to keep up with the changes in the market situation and the headquarters was merely obtaining only the overall picture. This was very well illustrated by the following comment.

In the continuous evaluation phase it has to be the area organisation that does the follow up and then sends an overall report to the headquarters every month. For the headquarters it is in a way working with only half intensity, but naturally the local organisation is very intensive in their efforts.

All of the information categories which were presented in table 9. seemed to be more or less equal in terms of importance to the headquarters organisation. Very commonly everything under the sun which could have an impact to the energy industry were followed to some degree and a more thorough research was required if a major change in some area occurred.

The role of business intelligence personnel in providing information to the local organisation was practically non-existent. However, the area organisations did provide an important channel of gathering information both from the specific market area as well as it's neighbouring geographical areas. This information moved to the headquarters both through the higher level management and the business intelligence network created from the business intelligence personnel in each office.

4.5 Analysis requirement of the data

In chapter 4.4 the emphasis was on presenting what are the various information types needed in the decision making in different phases of the market selection process. In this chapter the concentration is on how, to what degree and by whom the raw data should be analysed to create intelligence before it reaches the decision maker.

The question of who should do the analysis has to address at least two things: in which organisational level the analysis should be done inside the organisation and what should be the degree of analysis of the reports bought outside. All the interviewees were fairly unanimous of the fact that the reports bought outside should be delivered quite raw and the analysis task implemented inside the own organisation. This was illustrated by following comments.

Our style is that we want to develop as an organisation. Therefore we want to have the information quite raw and do the analysing ourselves.

I trust my colleagues enough so that I believe the analysis should be done inside the organisation. Of course outsiders could also give their conclusions for benchmarking purposes.

Usually we would like to have at least conclusions and options but if we order the report from outside we sometimes tell them that they are not allowed even to think.

The question where and by whom the analysis should be done inside the organisation was not nearly as simple. Some of the interviewees considered the right place for analysis to be the final decision maker who would know the overall picture whereas some were prone to the idea that the higher levels of the organisation would get only recommendations. A notice was made by the author that the higher in the hierarchy the person was the more willing he was to get only a summary and the conclusions. A very common approach was that the results should be disseminated to the management with conclusions and a high degree of analysis but containing all the important data to allow for the decision maker to make his or her own conclusions.

A question discussed with the interviewees was also the degree of reliability required from the information. In this case the opinions were also spread from one end to the other. Some were very eager to get the rumours because they were believed to be faster than the reliable information and in many cases also true which can be seen from the following comments.

In addition to the facts we should hear also the rumours, because for example many new laws are "known" by some people before the

decision is announced and we also have to get the information in advance.

I wish to hear a lot of the rumours, because they usually come faster than the actual information.

On the other hand some people wanted to base their decisions solely on cold facts which can be verified. Regarding this question the author noticed that the lower in the organisational hierarchy the person was the more eager he was to gather the "unreliable" information.

4.6 Dissemination requirement of the data

The final large group of questions that were asked from the interviewees was the requirements for dissemination and storage of information. The question of dissemination means how the intelligence is delivered to the decision maker: In what format, when and by whom. The storage of information means the system keeping the information acquired in the past accessible also in a later point of time.

Regarding the question of the desired format of the information the interviewees commonly distinguished three different forms of dissemination: electronic format like electronic mail or database, paper format and oral presentation. All of these methods were used in the case company and most of the interviewees also considered all of them necessary. All in all the dissemination method was expected to be highly versatile and include various information formats which is illustrated by the following comments.

The ideal situation would be that the information in an organisation would be so lively that it would be presented in many different formats.

I would like to have all the information in paper, in electronic format and also accompanied with a short oral presentation so that I could ask clarifying questions.

Moreover, very ordinary comment brought up also the fact that the information format required is very different for different organisational levels or individuals. The management in headquarters requires the information in a paper which they can go through in five minutes where as a country manager involved in everyday business needs to hear everything orally.

The questions of the method of information storage received very varying answers and no unanimous pattern was identified. Some of the interviewees even saw the storage of information unnecessary because the information gets out of date and is no longer useful. However, most of the interviewees considered a formal storage system important and a good half of them considered the only possibility an electronic common database. The varying comments towards the electronic database structure can be seen in the following comments.

We practically have to have an electronic database structure where all the information could be stored and referred to always when necessary.

The idea of a common database which would include all the existing information intrigues me but if it were to be only a storage of information I think it would not be used by anyone else than few employees who would have the time to browse it.

It is not so essential to go back to old information; it gets out of date and then it is no longer useful and therefore an expensive database would not be useful.

Even though no common pattern for many of the questions was found the unifying thing was that all of the interviewees regarded the most critical thing that the right information is in the right place at the right time.

5 CONCLUSIONS

This study has made an attempt to increase the understanding of how a market selection process in a business organisation is implemented and how the business intelligence system of the company can create the intelligence to back the decisions of the process. One of the major justifications for this study has been the increasing role of business intelligence in decision making processes and consequently the need from the management circles to gain additional knowledge of the subject.

Some of the basic reasons why business intelligence has become an important tool for the management of a business organisation are the increasing level of internationalisation, exponentially growing amount of information and some major changes in the basic structures of several industries. All of these became evident also in the case company. It is continuously increasing its international presence which has brought an additional amount of information for the management to be processed. Furthermore, the company operates in an industry which is going through a heavy phase of deregulation and this has had a major effect on the amount of external forces that need to be monitored. Therefore all of the employees interviewed saw a major challenge in controlling the amount of information and systemising its processing in order to gain a competitive edge in the international markets. Also the market selection which was the major concentration of this study was seen as an essential factor in managing the enterprise and its improvement was considered vital for the company's future development.

In the previous chapter the results of all the empirical data have been presented and an empirical model for the market selection process in the case company has been presented. The purpose of this chapter is finally to draw conclusions of the results from the empirical study and compare these to the theories presented in chapter two. The emphasis in chapter 5.1 is in analysing the similarities and differences of the theoretical model presented in chapter 2.4 and the findings from

the empirical evidence. The next chapter 5.2 concentrates in finding implications of the study to the use of business intelligence in market selection from the management point of view. Finally in chapter 5.3 the suggestions for further research will be presented to give an impact for the further development of the concept.

5.1 Major results of the study

One of the major contributions of this study was to present a theoretical model for the market selection process (chapter 2.4) and on the base of that to create a model describing how the process is organised in the case company (chapters 4.2 to 4.4). The basic idea of the theoretical model that a market selection is a process including both a decision making process and a business intelligence process was verified by the empirical research very clearly. Also the various phases of both of the processes could be identified both in the theoretical and the empirical model quite clearly.

Both started by an overall screening phase in which the general picture of the market was gathered. After that a decision to concentrate on certain market areas was made and a more detailed investigation of the market potential was conducted. In the theoretical model the concentration of the market study phase was analysing only the overall industry sales potential which was also the major importance of the market study in the case company. After the decision was made to continue both the theoretical and the empirical models showed a phase where the market was examined further now emphasising more on the possibilities of the company to conduct business there. According to some researches an important issue in this phase was the competitor information which would affect the possibilities of the company in the market (see chapter 3.2.3). In the case company the competitor information increased also its significance from the previous phase (see table 9.) while the focus was still in the project information signifying the potential of the market.

The next phase in the business intelligence process of the theoretical model was named market testing which as such was not included in the activities of the case company. However in a broad sense the deeper evaluation of an investment project named project development in the empirical model could be considered as market testing. The company tries to evaluate whether this sort of investment project would comply with its strengths and it could win the deal. The major reason why this phase in the case company is not the same has probably to do with the type industry in question. In power generation industry the company is not selling its product to large audience but the customer is usually either one or just a few companies. Therefore the market testing as it is understood in general is not applicable to this industry.

The next step in both of the models is to make the decision whether to enter (invest) in the market or not. In the theoretical model the process ends to the entry decision while in the case company the next step is to start following the changes in the environment on a continuous basis. However, this is not to do with the difference of the process framework itself but with the somewhat different time aspect of the approach.

The major difference of the models was the fact that in the theoretical model the process included several markets which were compared with each others until the very end, while in the case company this was not always the case. The first phases of the process did include a number of markets but many times already in the country study phase or the one after it the study concentrated on a single market which was the only one evaluated deeper.

Another question of interest in our study was the analysis requirement of the information. In the literature some researchers argue that the person who has the operational responsibility should be the one to do the analysis (see chapter 2.2.2.4). In the case company the approach was not very unanimous. Some people wanted the analysis to be done in the operational level while others preferred that the one in charge had this function. The question of how much of the intelligence

production work could be done outside the organisation was seen quite clearly in the case company. All of the interviewees considered using outsiders as a positive thing but the analysis task was left inside the organisation. The approach derived from the literature found positive features to both the in-house and outside intelligence creation.

The last issue addressed in the empirical part was to determine what is the ideal way of disseminating and storing the business intelligence. The literature described a hierarchy of different products of the intelligence system (see chapter 2.2.2.5) which were all identified also in the case company in the different phases of the market selection process. The dissemination methods discussed in the same chapter were also the one's which were used in the case company. However, the electronic database which according to many researchers is a must was not supported in the case company by all of the interviewees. Some of the interviewed saw the whole idea of an electronic database as a dissemination and storage instrument not really a necessity. The commonly shared idea was, however, that a systematic protocol for dissemination and storage of information in some form needs to exist.

Another important contribution of this study was to create a more specific and detailed process for the decision making process. As was stated in chapter 2.4 the existing literature presented gave a very vague and general picture of the various phases of the decision making process. In this study the decision making process in the case company has been described in more detail and this has both expanded the understanding of the phenomenon and given a good starting point for future research on the subject.

To finally elaborate the findings of the study on a more comprehensive approach one should go back to the original research problem and the research questions. One of the issues to be discovered was what are the phases of the decision making process and the business intelligence process of market selection. In chapter 4.3 a market selection process framework for the case company was developed and the various phases of the two processes were described. Also the question of the

people involved in each of the decision making process was addressed. In chapters 4.4 to 4.6 the emphasis was on evaluating the intelligence needs of its users and how could this intelligence best be produced. Also the question of the people involved in the business intelligence process was addressed in chapter 4.4. Based on the results of the empirical part it could be stated that all the research questions were addressed to and the answers were obtained. It could also be concluded that the basic idea of the theoretical model of market selection being a process including both a decision making process and a business intelligence process found a solid proof from the empirical evidence. Finally it could be stated that the theoretical model created was basically convergent with the empirical model and therefore the approach taken can be claimed to be the correct one.

5.2 Managerial implications

Market selection has become an increasingly important activity of a modern business organisation in the competition for competitive advantage vis-à-vis to competitors. Today the degree of success in selecting international markets influences not only future growth potential but in many instances the company's ability to survive. Therefore one of the major justifications for the selection of the particular subject for this study has been the need from the practitioners of business intelligence and management circles for the increasing knowledge of business intelligence in market selection process. On the course of the study it became clearly evident that also in the case company the management has many challenges to be solved before they can take the most out of their business intelligence system.

Based on the results of this study it can be concluded that organising the business intelligence system needs to be developed a more formalised and co-ordinated approach. An unorganised business intelligence system in the modern, highly competitive, hectic business environment is no longer sufficient because it can rapidly destroy the strengths the organisation has. Market selection is one of the

important business processes of a company where business intelligence plays a major role and therefore it is essential for efficient decision making that business intelligence could be integrated to it effectively.

The question still remains how could this effectiveness and systematic approach be achieved. What is required is a logical procedure beginning by identifying the intelligence needs, managing the process comprehensively and collecting, analysing and disseminating the intelligence systematically. Identifying the intelligence needs has to be done for each decision making phase individually which has been one of the task of this study in the case company. In chapter 4.4 the intelligence needs were identified and categorised according to the information types and the various phases of the market selection process. From there it became clearly evident that the information needs differ a great deal between task, individuals and organisational functions. Therefore it is of utmost importance that the business intelligence professionals have a clear picture of the intelligence needs of various intelligence users.

Managing the process needs a clear statement of information policy meaning how is the whole intelligence system managed, who should be involved and what is the task of each individual in the network. Furthermore it is not enough that this sort of statement exists but it should be distributed to all the employees of the company. Some of the questions it should also address are the collection, analysis and dissemination methods. Various information sources should be identified and the collection procedures, collection duration and the ones responsible should be identified. The correct instance for analysing the information should be decided and the analysis procedures evaluated. In the case company the analysis task was expected to be done inside the organisation on a rather high hierarchical level. The top management expected to get intelligence highly analysed but the analysis task was expected to be done by someone well aware of the overall picture. Therefore the right instance for the analysis task was the business intelligence function and the organisational layer below the top management. The next essential task to be addressed is the dissemination method and its systemisation. In the case company the dissemination was preferred to be

as versatile as possible. It should include the systematic storage of certain information, its delivery on paper as well as an oral briefing which would increase the two-way communication.

As a conclusion for the management circles it could be remarked that managing the business intelligence system is not an easy task. The literature, as well as the empirical results of this study show that opinions towards business intelligence vary considerably. Implementing a business intelligence system takes several years to develop and the problems from implementing this kind of across-the-entire-organisation-activity are numerous. Then again for the future success of the whole organisation it is of essential importance and is therefore a necessity.

5.3 Suggestions for future research

The purpose of this study has been to examine how can business intelligence be integrated to the decision making process of a company selecting foreign market to penetrate. A theoretical model has been created and compared to the experiences gathered from the case company. However, since the empirical evidence is gathered from a company operating solely in the power generation industry the results of the study can not necessarily be generalised to other fields of industry. Therefore one natural suggestion for future research would be to test the model created in this study in another, different environment and thereby increase the generalisability of the findings.

On the other hand, Finnish business organisations have employed business intelligence as a systematic method for assisting decision making only a relatively short period of time and therefore several areas are still not discovered. Challenging direction for future studies would be to examine how an effective information technology system could be introduced to enhance the business intelligence usage. Moreover, possible areas of future research could certainly be developing company's counter intelligence or preventing the corporate espionage as well as further studying the decision making phases of the market selection

which was already mentioned earlier. Furthermore, market selection process is just one, even though an essential, user of business intelligence and hence the usage of business intelligence to support many other business processes would be worthwhile.

Finally an important area of future research would be creating measuring techniques to evaluate the overall effect of business intelligence to the performance of a company. It can be assumed that after a certain point, increasing the amount of information does no longer improve the quality of decisions. To further elaborate the results of this study it could be concluded that from the standpoint of a business organisation the essential thing is that the right intelligence is in the right place at the right time at the right cost.

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APPENDIX 1. QUESTIONNAIRE FOR THE 1ST INTERVIEW ROUND

1. Why did IVO get interested of the country in the first place? What information did make you interested of the country before deciding to find out more? Who made the decision? Who found the information?
2. At the same time were you screening several alternative destinations?
3. Did you in some point of time decide to make a formal country analysis? If so who did it? Who ordered it? What happened in between the preliminary interest and the analysis?
4. Was there a formal decision making to conduct some additional measures / find out more of the country?
5. What kind of research did you make before starting to screen investment opportunities?
6. Who makes the decision to appoint a team for studying a specific project? Who is appointed into this kind of team?
7. At which point of time is an office established into the country? who is employed into the office? Who makes the decision of establishing an office?
8. Who makes the decision to invest in a power plant? On the base of which information is the decision made? What is the critical information? Who collects it? Who / How many people is involved in the process at this point of time?
9. What kind of information is collected of the country after the investment decision is being made? Who collects it?
10. Under what kind of circumstances is the withdrawal decision made? Based on what information? Who makes the decision?
11. Is there any other essential decision making situations or information collection phases in the process that we haven't covered yet? Is there any other relevant issues related to our subject that we haven't covered yet?

APPENDIX 2. BASIS FOR THE SECOND INTERVIEW ROUND

THE ROLE OF THE INTERVIEWEE

- ❑ Interviewee's task and responsibilities
- ❑ Interviewee's role in the country evaluation process

INFORMATION REQUIREMENTS OF THE INTERVIEWEE

Market information

- ❑ What information you need
 - General geographic and sociographic information
 - The degree of liberalisation
 - The size of the market
 - The competitive situation in the market
 - Political situation
 - Legal environment
 - Risk study
 - What else?
- ❑ Which countries: Old, the one's you request, totally new
- ❑ Do you need information only on power generation or also the related energy industries
- ❑ What is the essential information in the country evaluation process

Competitor information

- ❑ What information
 - The strategy
 - Financial situation
 - The on going projects and their status
 - The personnel (the management and their working / personal history)
 - R&D development
 - Relationships to locals and strategic alliances

- ❑ Which competitors: The one's already in the country or also the potential
- ❑ Do you want the information of the existing competitors only in that country or globally

Project information

- ❑ The customers, suppliers
- ❑ The financial background
- ❑ The plant related technical specifics
- ❑ The government approach

ANALYSIS OF INFORMATION

- ❑ Do you need history, present or future information (i.e. do you want to do the projections yourself, by BI or by outsider)
- ❑ Do you want to be analysed the importance of the country for IVO and the fit to the existing strengths and strategies
- ❑ Do you want suggestion for future actions
- ❑ What are the quality requirements of the information (gossips vs. surveys)
- ❑ What is the ideal size of the information modules (How much time can you use to go through the information)

DISSEMINATION AND STORAGE OF INFORMATION

- ❑ What is the format in which the information is preferably received (On paper, orally or in electronic format)
- ❑ How often and in which phase of the process is the information required (only when required, automatically within certain intervals or when something happens)
- ❑ How is the information preferably stored (centrally, electronically, on paper, not stored)

APPENDIX 3. LIST OF THE INTERVIEWEES

Huopalahti Kari	Executive Vice President, Member of the Board, IVO Group (1)
Mäntynen Risto	Senior Corporate Advisor, IVO Group (1)
Auranne Eero	Vice President, IVO Power Generation (2)
Laine Paul	Vice President, IVO Power Engineering (2)
Salosaari Esko	Area Director, IVO Power Generation, Emerging Markets (3)
Korpela Timo	Senior Corporate Advisor, IVO Power Generation International (1)
Aho Seppo	Director, Strategic Planning and Business Excellence, IVO Power Generation International (3)
Nordström Markku	Manager, Business Intelligence and Market Analysis, IVO Power Generation International (3)
Hyppönen Seppo	Manager, Business Development, IVO Power Generation Emerging Markets (1)
Walden Maria	Manager, Business Development, IVO Power Generation Emerging Markets (2)
Vähäpiikkiö Jaakko	Manager, Business Development, IVO Power Generation Emerging Markets (1)
Linnanvuori Jouko	Manager, Business Development, IVO Power Generation Emerging Markets (1)
Andersson Heikki	Sales Manager, IVO Power Engineering (1)
Wilander-Prajogo Paula	Market Analyst, IVO Power Engineering (1)

All together: 14 Interviewees, 23 interviews

Note: () = number of interview sessions